

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
General Certificate of Education Advanced Level

**PHYSICS**

**9702/05**

Paper 5 Practical Test

October/November 2005

**1 hour 30 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 **6** printed pages and **2** blank pages.



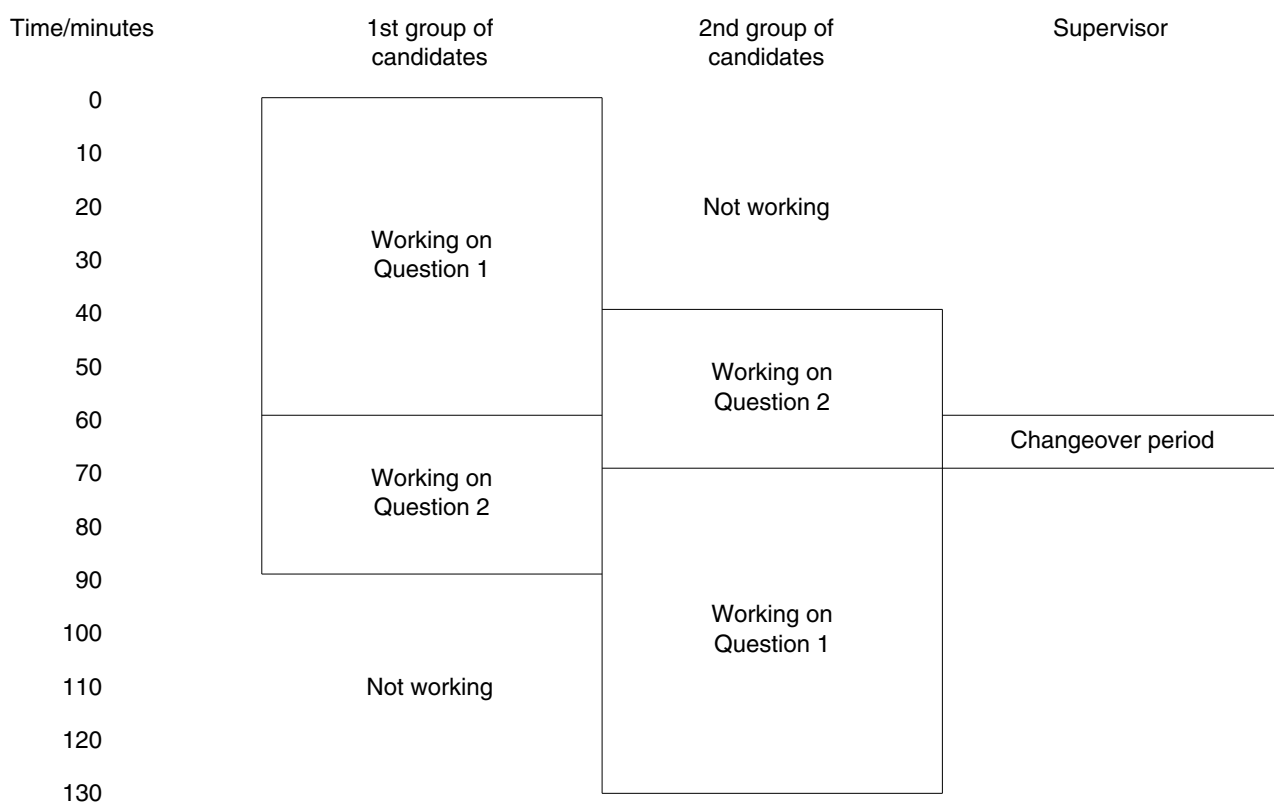
### Instructions for preparing apparatus

These instructions detail the apparatus required for the experiment in this paper. A summary of the 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.

### Number of sets of apparatus

In addition to a few spare sets, there should ideally be one set of apparatus per candidate.

If this is not possible, then the minimum number of sets of apparatus to be provided should be sufficient for half the candidates to carry out the experiment simultaneously, plus a few spare sets. With this number of sets available, a staggered start to the examination will be required, which may be organised as shown in the diagram below.



### 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 standard items such as a 30 cm rule, 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.

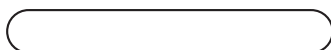
**Question 1****Apparatus requirements (per set of apparatus unless otherwise specified)**

Stand, boss and clamp.

G-clamp for clamping the base of the stand to the bench.

Six expendable steel springs. The unstretched length of the spirals on each spring should be about 2 cm (e.g. Philip Harris catalogue number 41397). The spring constant of each spring should be about  $25 \text{ N m}^{-1}$ .

Five small hooks (which will be used to connect the springs together). See Fig. 1.1. These may be cut from paper clips.



**Fig. 1.1**

100 g mass holder, or 50 g mass holder with 50 g mass attached to give a total mass of 100 g.

Stopwatch reading to 0.1 s or better.

The apparatus should **not** be assembled.

If the apparatus is to be used by a second candidate, it should be dismantled at the end of the first candidate's experiment and the equipment laid out on the bench ready for the next candidate to use.

**Information required by Examiners**

None.

**Question 2**

Question 2 is a design exercise that does not require apparatus.

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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 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, 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 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 which 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 .....

