

CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

**CO-ORDINATED SCIENCES**

**0654/05**

Paper 5 Practical Test

May/June 2003

**CONFIDENTIAL INSTRUCTIONS**

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

**The Supervisor's attention is drawn to the form on page 4 which must be completed and returned with the scripts.**

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

by e-mail: International@ucles.org.uk,

by phone: +44 1223 553554,

by fax: +44 1223 553558,

stating the nature of the query and the syllabus number quoted above.

This document consists of 4 printed pages.

## Instructions for preparing apparatus

These instructions detail the apparatus, reagents and specimens required by each candidate for the experiment in this paper. A summary of the questions that will be presented to the candidates is included, where appropriate, to allow the 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 science laboratory will be available, including a supply of purified water (distilled or deionised).

It is expected that candidates will have either a watch or sight of a clock with second hand.

If arrangements are made for different sessions for different groups of candidates, care must be taken to ensure that the different groups of candidates are effectively isolated so that **no information passes between them.**

### For Question 1

*Each candidate will require:*

- (i) a clamp stand, boss and clamp;
- (ii) a large test-tube, size 150 x 25 mm;
- (iii) a mounted needle;
- (iv) a piece of dried toast – a cube of side 1 cm approximately (spare pieces should be available);
- (v) a 250 cm<sup>3</sup> beaker containing approximately 150 cm<sup>3</sup> of cold water, labelled 'cold water';
- (vi) a bung to fit the test-tube;
- (vii) a test-tube rack. If the test-tube is too wide to fit in the rack an empty 250 cm<sup>3</sup> beaker can be used instead;
- (viii) fresh limewater (20 cm<sup>3</sup>);
- (ix) a 100 cm<sup>3</sup> beaker containing 20 cm<sup>3</sup> of 1% starch solution, labelled 'solution A';
- (x) a 100 cm<sup>3</sup> beaker containing 20 cm<sup>3</sup> of 1% amylase solution, labelled 'solution B';
- (xi) 3 clean dropping pipettes;
- (xii) 3 test-tubes, size 125 x 15 mm;
- (xiii) biuret reagent + extra pipette for this if necessary;
- (xiv) Benedict's reagent + extra pipette for this if necessary;
- (xv) access to a hot water bath. The water should be on the point of boiling, but should not be boiling vigorously. Several candidates may share the same water bath if this is done without overcrowding.

Centres are advised to ensure that the amylase breaks down the starch.  
The piece of toast should be dry enough to be readily ignited.

**For Question 2**

*Each candidate will require:*

- (i) a spring of unstretched length about 40 mm, such that a mass of 100 g stretches it about 40 mm;
- (ii) a mass hanger for carrying up to 250 g added masses;
- (iii) access to a selection of masses to make 50, 100, 150, 200, 250 g;
- (iv) a stand and two clamps with suitable fixing point for the spring;
- (v) a metre rule capable of measuring to the nearest mm;
- (vi) a pin;
- (vii) a small piece of plasticine (modelling clay) for attaching the pin to the spring.

**For Question 3**

*Each candidate will require:*

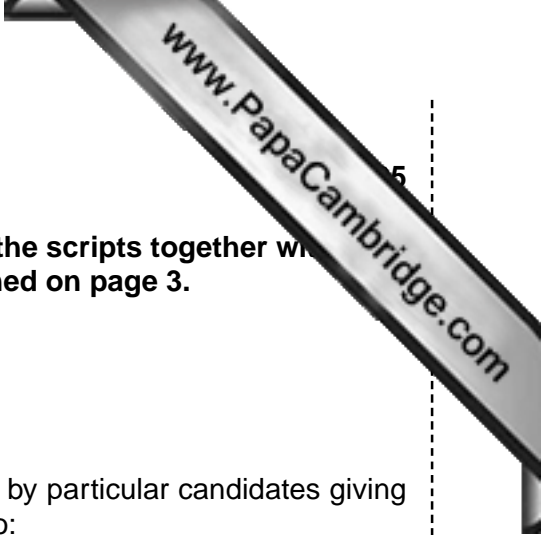
- (i) two strips of magnesium ribbon, about 5 cm each length;
- (ii) a thin strip of zinc metal, about 3 x 1 cm;
- (iii) a thin strip of copper metal, about 3 x 1 cm;
- (iv) a piece of sandpaper for cleaning the metals;
- (v) 4 filter papers;
- (vi) a voltmeter. Candidates will be measuring voltages of up to 2 V;
- (vii) two lengths of wire, with one end attached to a crocodile clip;
- (viii) about 10 cm<sup>3</sup> aqueous copper(II) sulphate solution, concentration about 0.2 mol dm<sup>-3</sup>;
- (ix) about 20 cm<sup>3</sup> of dilute hydrochloric acid, concentration about 0.05 mol dm<sup>-3</sup>. Label this 'very dilute acid';
- (x) A dropping pipette.

**Procedure to be followed by candidates**

Candidates will be required to measure the voltage produced when two metals are placed either side of a wet filter paper.

*Information required from the Supervisor:*

**The Supervisor is asked to carry out the experiments and to enter the results on a spare copy of the examination paper, clearly marked 'Supervisor's Results' and showing the Centre number. This should be returned with the scripts. Failure to do so may cause the candidates to be penalised.**



This form must be completed and returned in the envelope with the scripts together with the seating plan and the Supervisor's Results mentioned on page 3.

May/June 2003

*General*

The Supervisor is invited to give details of any difficulties experienced by particular candidates giving their names and candidate numbers. These should include reference to:

- (a) difficulties due to faulty apparatus;
- (b) accidents to apparatus or materials;
- (c) physical handicaps, e.g. short sight, colour blindness;
- (d) any other information that is likely to assist the Examiner, especially if this cannot be discovered in the scripts;
- (e) any help given to a candidate.

*The Supervisor is asked to supply the following information:*

Plan of work benches, giving details by candidate numbers of the places occupied by the candidates for each session and a copy of the 'Supervisor's Results'.

NAME OF CENTRE .....

SIGNED .....

*Supervisor*

CENTRE NUMBER .....

DECLARATION (to be signed by the Principal)

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

NAME .....

(in block capitals)

SIGNED .....(Principal)