

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

**COMBINED SCIENCE**

**0653/05**

Paper 5 Practical Test

October/November 2004

**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 UCIE

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.

### 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 candidate 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).

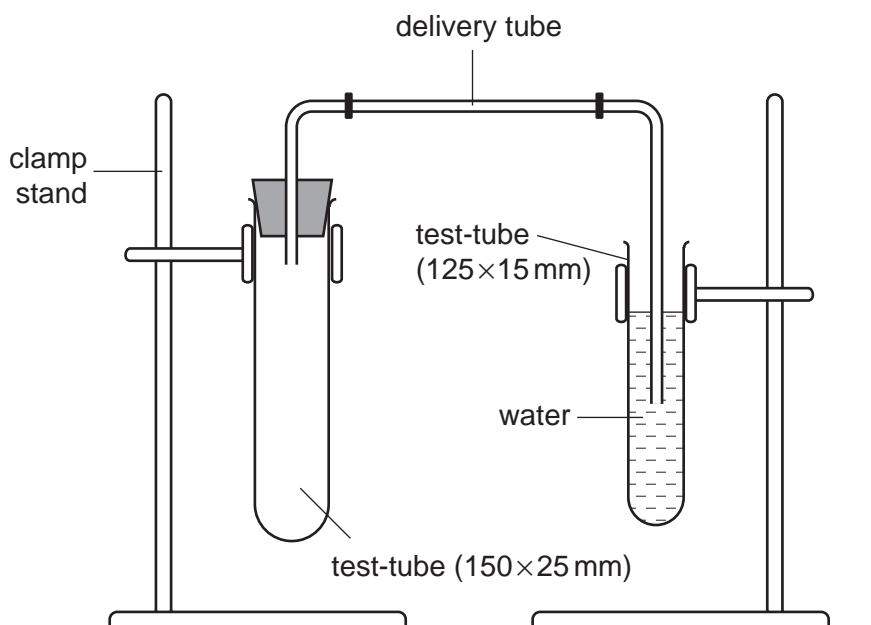
It is expected that candidates will have either a watch or sight of a clock with second hand.

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 test-tube, size  $150 \times 25$  mm;
- (iii) a test-tube, size  $125 \times 15$  mm;
- (iv) a test-tube rack or a second boss and clamp to support the smaller test-tube;
- (v) a bung to fit the larger test-tube. The bung should have a delivery tube passing upwards through it, then leading vertically downwards into the smaller test-tube; see diagram below



- (vi) a thermometer ( $-10$ – $100^\circ\text{C}$ );
- (vii) a medium-sized potato;
- (viii) a scalpel or sharp knife;
- (ix) a white tile;
- (x) a small water-saturated piece of paper

- (xi) 10 cm<sup>3</sup> measuring cylinder or syringe;
- (xii) 60 cm<sup>3</sup> 20-volume hydrogen peroxide solution; (see note below)
- (xiii) a stop watch or access to a clock with a second hand;
- (xiv) access to a water bath heated to 70°C. Candidates will need to have means of support for their large test-tubes in the water bath. A test-tube rack or clamp would be suitable. Several candidates can share the same water bath if this can be done without overcrowding;

The hydrogen peroxide needs to be freshly prepared and tested just prior to the examination. It must produce a good flow of bubbles when a small piece of potato is placed in it.

### For Question 2

*Each candidate will require:*

- (i) a biconvex lens of focal length about 10 cm, fixed with plasticine. Alternatively a suitable stand could be used. It will be assumed that all candidates will be provided with lenses of similar focal length;
- (ii) an illuminated object such as a lighted candle or small light bulb;
- (iii) a screen which can be a piece of white card;
- (iv) a metre rule;
- (v) some plasticine or 'Blu-Tack'.

Avoid placing candidates in strong sunlight for this experiment. Plasticine is used to fix the lens at right angles to the metre rule.

### For Question 3

*Each candidate will require:*

- (i) approximately 10 cm of magnesium ribbon;
- (ii) scissors;
- (iii) a rule graduated in mm;
- (iv) a 100 cm<sup>3</sup> beaker;
- (v) a 100 cm<sup>3</sup> measuring cylinder;
- (vi) about 250 cm<sup>3</sup> of a solution of hydrochloric acid, concentration about 2 mol dm<sup>-3</sup>. It is important that all candidates have acid of the same concentration. Label this 'solution P';
- (vii) a stop clock.

*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.

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*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)