

CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

**CO-ORDINATED SCIENCES**

**0654/05**

Paper 5 Practical Test

October/November 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.

### 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).

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) 8 test-tubes of size 125 × 15 mm;
- (ii) one or two test-tube racks to hold the 8 test-tubes;
- (iii) a pipette;
- (iv) three 250 cm<sup>3</sup> beakers;
- (v) stand and clamp;
- (vi) two labels for labelling test-tubes;
- (vii) two thermometers, range 10 °C to 100 °C;
- (viii) an elastic band, approximately 5 cm long and 2 mm wide;
- (ix) a stop watch or access to a clearly visible clock with a second hand;
- (x) a supply of hot water. Each candidate will request the hot water after they have set up their apparatus. At this point water should be poured into one of their beakers. It is important that the water provided is only poured to the 150 cm<sup>3</sup> level (the beaker is approximately half full) to enable the candidate to use the water safely. Ideally the water could be boiled in a kettle and dispensed as required. This would ensure that the water is hot enough. It should be over 90 °C.

### Procedure to be followed by candidates

The purpose of the elastic band is to hold a bundle of 7 test-tubes containing hot water.

**For Question 2**

Each candidate will require:

- (i) 8 test-tubes 125 × 15 mm and a test-tube rack;
- (ii) 150 × 25 mm test-tube or a 100 cm<sup>3</sup> beaker;
- (iii) test tube holder;
- (iv) Bunsen burner;
- (v) filter paper and funnel;
- (vi) red litmus paper;
- (vii) about 2 g of substance **X**;
- (viii) about 20 cm<sup>3</sup> dilute nitric acid, concentration about 1 mol dm<sup>-3</sup>;
- (ix) access to dilute hydrochloric acid, aqueous sodium hydroxide and aqueous ammonia, concentrations about 2.0 mol dm<sup>-3</sup> and aqueous silver nitrate, concentration about 0.05 mol dm<sup>-3</sup>;

**X** is a mixture of copper(II) oxide and ammonium chloride in equal parts by mass.

**For Question 3**

Each candidate will require:

- (i) 250 cm<sup>3</sup> beaker containing about 200 cm<sup>3</sup> water;
- (ii) stand and clamp;
- (iii) 0–110 °C thermometer (can be re-used from Q1);
- (iv) a burette or a dropping pipette calibrated to deliver 1 cm<sup>3</sup>;
- (v) a Bunsen burner, tripod and gauze;
- (vi) a 150 × 25 mm tube containing 7.0 g ± 0.1 g potassium nitrate and 5.0 cm<sup>3</sup> water, measured from a burette. The water is insufficient to dissolve the solid at room temperature. This tube should be stoppered until required for the experiment.

**Procedure to be followed by candidates**

Candidates will be required to add 1 cm<sup>3</sup> water at a time to the tube in (vi).

*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**

**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)