

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

**CO-ORDINATED SCIENCES**

**0654/05**

Paper 5 Practical Test

May/June 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 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 candidates is included, where appropriate, to allow the teacher to test the apparatus appropriately. **No access to the question paper 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 variegated dicotyledonous plant that has been in the dark for 48 hours, labelled 'A'. A pelargonium would be ideal;
- (ii) a similar type of plant that has been in bright daylight, labelled 'B';  
Candidates will select one leaf from each plant so the same plant may be shared between several candidates.
- (iii) a pair of scissors;
- (iv) a pair of tweezers;
- (v) 2 large test-tubes of size 150 × 25 mm;
- (vi) a test-tube rack or beaker to support the tubes;
- (vii) 2 small adhesive labels;
- (viii) a glass rod;
- (ix) 30 cm<sup>3</sup> alcohol (industrial methylated spirit);
- (x) one pair of tongs;
- (xi) container for safe disposal of alcohol, e.g. a larger beaker;
- (xii) a 100 cm<sup>3</sup> beaker containing cold water;
- (xiii) a white tile;
- (xiv) 20 cm<sup>3</sup> iodine solution;
- (xv) Bunsen burner, heatproof mat, tripod, gauze, 400 cm<sup>3</sup> beaker and water to half-fill it; if no Bunsen or spirit burner is available candidates should have access to a very hot (simmering) water bath. They should be able to immerse their leaf samples in the water and later have a means of support of their tubes in the water (clamp or test-tube rack). Care should be taken to avoid overcrowding.

**For Question 2**

Each candidate will require:

- (i) a plastic cup, size about  $200 \text{ cm}^3$ . A drinking cup is suitable;
- (ii) a  $100 \text{ cm}^3$  measuring cylinder;
- (iii) a ruler graduated in mm. The ruler needs to be at least 20 cm;
- (iv) a large beaker or other container to hold sufficient water to allow the plastic cup to be submerged.

**For Question 3**

Each candidate will require:

- (i) two hard glass test-tubes, size  $125 \times 20 \text{ mm}$ ;
- (ii) four test-tubes, size  $125 \times 20 \text{ mm}$ ;
- (iii) 2 spills;
- (iv) two pieces of Universal Indicator paper;
- (v) limewater and means of testing for carbon dioxide;
- (vi) a Bunsen burner;
- (vii) access to dilute sulphuric acid, concentration about  $1 \text{ mol dm}^{-3}$ ;
- (viii) access to a solution of potassium manganate(VII), concentration about  $0.01 \text{ mol dm}^{-3}$ . Label this solution **X**;
- (ix) about 3 g of tartaric acid. Label this solid **A**;
- (x) about 3 g of sodium hydrogencarbonate. Label this solid **B**.

Candidates can be supplied with more **A** and **B** if necessary without incurring any penalty.

*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 2004**

*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)