



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

**COMBINED SCIENCE**

**0653/51**

Paper 5 Practical Test

**May/June 2010**

CONFIDENTIAL INSTRUCTIONS

**Great care should be taken to ensure 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 queries regarding these instructions, please contact CIE

by e-mail: [International@cie.org.uk](mailto:International@cie.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 each 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).

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:*

For the purposes of this practical, the leaves should be of the same species but not necessarily from the same plant.

- (i) two leaves from the same plant. These leaves should be clearly of different sizes, at least 10 cm different in length and the larger one obviously wider too. The smaller leaf should be labelled **sun leaf**. The larger leaf should be labelled **shade leaf** ;
- (ii) a ruler graduated in mm.

### For Question 2

*Each candidate will require:*

- (i) a soft glass test-tube 125 mm x 15 mm ;
- (ii) a ruler at least 30 cm long, graduated in mm ;
- (iii) a supply of dry sand, approximately 15 g ;
- (iv) two glass beakers at least as tall as the test-tube. 400 cm<sup>3</sup> tall form beakers are suitable. One of these should be filled with water and the other with saturated salt solution. Label the former 'water' and the latter '**liquid P**' ;
- (v) some tissues for drying the outside of the tube.

**For Question 3**

*Each candidate will require:*

- (i) 5 test-tubes. If fewer are provided candidates will need to wash used ones ;
- (ii) a test-tube rack ;
- (iii) a 10 cm<sup>3</sup> measuring cylinder ;
- (iv) a dropping pipette ;
- (v) about 10 cm<sup>3</sup> of solution **A** ;
- (vi) about 10 cm<sup>3</sup> each of solutions **Y** and **Z** ;
- (vii) about 20 cm<sup>3</sup> each of solution **X** ;
- (viii) access to the indicator phenolphthalein, labelled indicator ;
- (ix) about 2 cm length of magnesium ribbon ;
- (x) access to aqueous silver nitrate, labelled silver nitrate ;
- (xi) a splint ;
- (xii) a Bunsen burner.

Solution **X** is hydrochloric acid of concentration about 0.1 mol dm<sup>-3</sup>.  
Solution **Y** is hydrochloric acid of concentration about 0.05 mol dm<sup>-3</sup>.  
Solution **Z** is hydrochloric acid of concentration about 0.025 mol dm<sup>-3</sup>.

Sufficient of the 0.1 mol dm<sup>-3</sup> should be made to allow appropriate dilution to produce the 0.05 and 0.025 mol dm<sup>-3</sup> solutions.

Solution **A** is sodium hydroxide solution, concentration about 0.05 mol dm<sup>-3</sup>. The concentration of this solution should be adjusted if necessary to ensure that 5 cm<sup>3</sup> of solution **X** requires between 20 – 30 drops of the alkali for neutralisation.

Spare materials and equipment should be available and can be provided without penalty. **Candidates should be made aware of this.**

*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 2010**

*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 this practical examination has been carried out so as to maintain fully the security of the examination.

NAME .....  
(in block capitals)

SIGNED ..... (Principal)



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