UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CO-ORDINATED SCIENCES **0654/05**

Paper 5 Practical Test **May/June 2009**

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
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).

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 need:

(i) 2 large test-tubes of size 150 x 25 mm ;

(ii) a test-tube rack or beaker to support the tubes ;

(iii) 30 cm^3 of 20-volume hydrogen peroxide solution, freshly prepared ;

(iv) a 10 cm^3 measuring cylinder ;

(v) access to liquid detergent, e.g. washing-up liquid ;

(vi) a dropping pipette for dispensing the detergent ;

(vii) a piece of potato, labelled **A** from which the candidate will prepare two small cubes of side 1 cm ;

(viii) a sample of tissue labelled **B**. This should be of similar size to the piece of potato. To provide some flexibility to individual centres a tissue of plant origin should be chosen that will show a reasonable reactivity of catalase with the hydrogen peroxide solution, and a different activity from potato. Suitable tissues are sweet potatoes and turnip. Tissue **B** should be the same for all candidates ;

(ix) a white tile ;

(x) a sharp knife or scalpel ;

(xi) a ruler graduated in mm ;

(xii) a stop watch or clear view of a clock with a second hand.

The tissue samples and hydrogen peroxide solution should be tested before the examination as follows:

- Place 10 cm^3 of 20-volume hydrogen peroxide in a large test-tube (as in **(i)**);
- Add 2 drops of liquid detergent
- Add 2 cubes of tissue **A** of side 1 cm, each cut in half.
- The height of the foam produced in the test-tube after 5 minutes should be no greater than 8 cm.
- Repeat this procedure for tissue **B**.

If necessary the 20-volume hydrogen peroxide may be diluted.

For Question 2

Each candidate will require the following:

(i) 1 large test-tube, 150 x 25 mm ;

(ii) 100 cm^3 measuring cylinder ;

(iii) retort stand and clamp ;

(iv) a ruler at least 15 cm long and calibrated in mm ;

For Question 3

(i) approximately 2 g of copper(I) oxide, labelled **P** ;
NOTE: this is not the same substance as copper(II) oxide.

(ii) a small piece of porcelain or material on which to heat a solid. A piece of metal cut from a food can would be suitable ;

(iii) a pair of tongs ;

(iv) filter paper and funnel ;

(v) 4 test-tubes 125 x 15 mm and a rack ;

(vi) a large test-tube 150 x 25 mm ;

(vii) about 5 cm^3 of potassium iodide solution, approximately 0.1 mol dm^{-3} ;

(viii) about 5 cm^3 sodium thiosulfate solution, about 0.1mol dm^{-3}, labelled solution **X** ;

(ix) about 15 cm^3 of each of the following acids, all approximately 1 mol dm^{-3} :

hydrochloric acid

sulfuric acid

nitric acid.

(x) approximately 1 g zinc powder ;

(xi) a Bunsen burner and means of lighting ;

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 then be returned with the scripts. Failure to do so may cause the candidates to be penalized.

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

NAME .....
(in block capitals)

SIGNED ..... (Principal)