



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

**CO-ORDINATED SCIENCES**

**0654/51**

Paper 5 Practical Test

**May/June 2011**

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 8 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.

\* 2 0 7 6 7 5 2 9 6 5 \*

This document consists of **6** printed pages and **2** blank pages.



### Instructions for preparing apparatus, reagents and specimens.

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.**

**All specimens should carry only the code letters and numbers as indicated and their identity should not be revealed to the candidates.**

Supervisors should ensure that all specimens have the correct identity attached to the specimen and that these are **not** removed during the examination.

If a candidate breaks any of the apparatus, or loses any of the material supplied, the matter should be rectified and a note made in the Supervisor's Report.

Supervisors are advised to remind candidates that **all** substances in the examination should be treated with caution. Pipette fillers and safety goggles should be used where necessary.

In accordance with COSHH (Control of Substances Hazardous to Health) Regulations, operative in the UK, a hazard appraisal of the examination has been carried out.

The following codes are used where relevant

**C** = corrosive substance

**F** = highly flammable substance

**H** = harmful or irritating substance

**O** = oxidising substance

**T** = toxic substance

**N** = harmful to the environment

The Supervisor should make sure the Supervisor's Report is fully completed and a copy is enclosed with each packet of scripts.

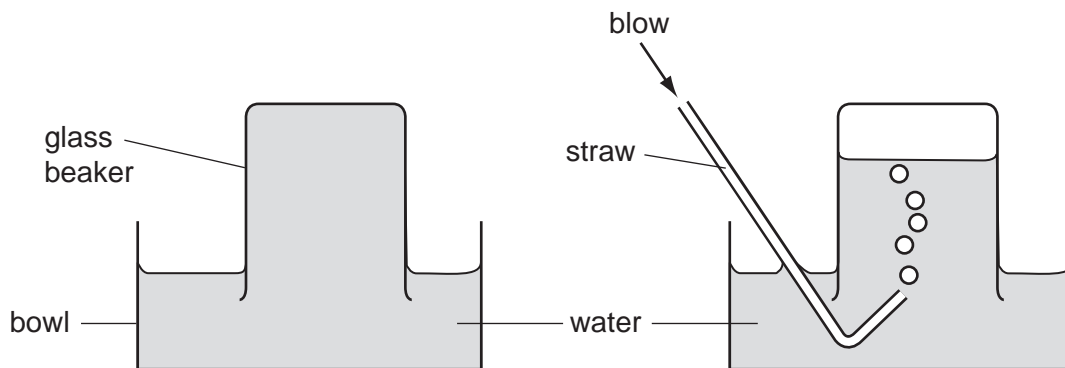
Centres are reminded that they are **not** permitted to open the question paper envelopes before the examination. Centres are also referred to the Handbook for Centres, and in particular Section 3.1.2(c)(i), Security of Question Papers and Examination Materials, as well as 3.3.11.1, Practical Examinations in Science Subjects.

If there are difficulties with any aspect of setting up this practical examination that the Centre is not able to resolve, it is essential, for Centres to contact the Product Manager as soon as possible by e-mail to [international@cie.org.uk](mailto:international@cie.org.uk), by fax to +44 1223 553558 or by phone to +44 1223 553554.

**For Question 1**

Each candidate will require the following:

- (i) a 500 cm<sup>3</sup> beaker or similarly sized large glass jar ;
- (ii) a plastic bowl or trough, with sufficient depth to fill (i) with water, see Fig. 1.1. ;
- (iii) a candle or night light ;
- (iv) a Bunsen burner (or other means to light the candle) ;
- (v) a stopclock or timer with a seconds hand ;
- [H] (vi) 50 cm<sup>3</sup> limewater, labelled **limewater** ;
- (vii) 2 large test-tubes, about 150 x 25 mm ;
- (viii) a bung to fit one of the large test-tubes ;
- (ix) a drinking straw, or hollow tube suitable for blowing through ;
- (x) a test-tube rack ;
- (xi) a heat proof tile ;
- (xii) a means of labelling the tubes.



**Fig. 1.1**

**For Question 2**

Each candidate will require the following:

- (i) an elastic band about 10 cm long and 3 to 4 mm wide. The bands should be taken from new stock ;
- (ii) a 30 cm rule graduated in mm ;
- (iii) a cork ;
- (iv) a large pin ;
- (v) a retort stand and clamp ;
- (vi) 5, 100 g masses and a carrier that can be attached to the elastic band. If carriers are not available, candidates will need some thread to tie the masses together and to the band.

**For Question 3**

Each candidate will require the following:

- (i) about 3 g of iron(III) ammonium sulfate, labelled **Z** ;
- (ii) a hard glass test-tube, about 125 x 15 mm ;
- (iii) a large test-tube, about 150 x 25 mm ;
- (iv) 4 test-tubes, about 125 x 15 mm ;
- (v) litmus paper ;
- (vi) a Bunsen burner ;
- (vii) means of holding a test-tube ;
- (viii) a spatula ;
- (ix) a test-tube rack ;
- (x) access to the following solutions will be required:

- [H] dilute sulfuric acid, concentration about  $1.0 \text{ mol dm}^{-3}$ , labelled **sulfuric acid** ;
- [C] aqueous solution of sodium hydroxide, concentration about  $1.0 \text{ mol dm}^{-3}$ , labelled **sodium hydroxide** ;
- aqueous solution of ammonia, concentration about  $1.0 \text{ mol dm}^{-3}$ , labelled **ammonia** ;
- hydrochloric acid, concentration about  $1.0 \text{ mol dm}^{-3}$ , labelled **hydrochloric acid** ;
- [C] nitric acid, concentration about  $1.0 \text{ mol dm}^{-3}$ , labelled **nitric acid** ;
- barium chloride solution, labelled **barium chloride** ;
- [N][H] silver nitrate solution, labelled **silver nitrate**.

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 done, out of sight of the candidates, using the same solutions, reagents, specimens and apparatus as the candidates.**

**A copy of the 'Supervisor's Results' should be returned with each packet of 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 5.

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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)



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