



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

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**CO-ORDINATED SCIENCES**

**0654/52**

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.**

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**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.

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

**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 need:

- (i) one piece of stale bread (or toast) of known mass, labelled **m<sub>b</sub>**. The bread should be able to be picked up onto a mounted needle. It should be of sufficient dryness to be able to ignite in a Bunsen burner flame. It should be of size approximately 2 cm x 2 cm x 2 cm. The bread should be pre-weighed and its mass recorded, in grams, to an accuracy of 0.1 g (for the candidate to record).
- (ii) mounted needle ;
- (iii) two clamps, bosses, and one stand ;
- (iv) 50 cm<sup>3</sup> water ;
- (v) a 10 cm<sup>3</sup> pipette or a 10 cm<sup>3</sup> (or 25 cm<sup>3</sup>) measuring cylinder ;
- (vi) a thermometer, range 0 °C to 100 °C ;
- (vii) a Bunsen burner ;
- (viii) 4 hard glass test-tubes, size 150 x 25 mm ;
- (ix) three pieces of fresh bread, without crusts labelled **fresh bread**, of size approximately 2 cm x 2 cm x 2 cm ;
- (x) a glass rod ;
- (xi) test-tube rack and a test-tube holder ;
- (xii) 10 cm<sup>3</sup> Benedict's reagent, labelled **Benedict's** solution ;
- (xiii) 10 cm<sup>3</sup> biuret reagent, labelled **biuret** solution ;
- (xiv) 10 cm<sup>3</sup> iodine reagent, labelled **iodine** solution ;
- (xv) three teat pipettes ;
- (xvi) water bath at least 90 °C (or provide boiling water in an insulated container) for Benedict's testing ;
- (xvii) means of labelling.

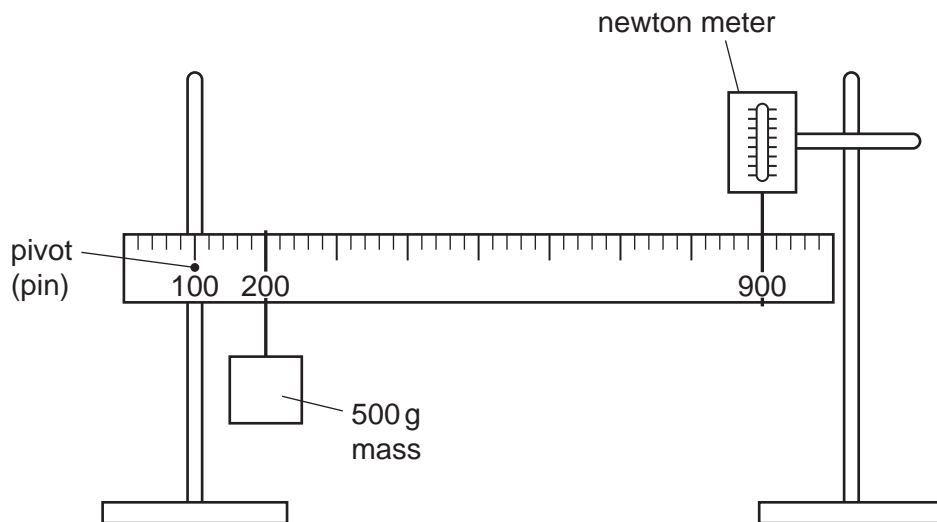
**Note:** If the stale bread (or toast) does not burn easily, brush each piece with a thin layer of oil or melted butter.

**For Question 2**

Each candidate will need:

- (i) a wooden metre rule with a small hole at the 100 mm mark to allow a pin (and the pinhead) to pass through ;
- (ii) a strong pin to act as a pivot for the rule ;
- (iii) a cork ;
- (iv) two retort stands and two clamps ;
- (v) a 500 g mass and thread to attach to the rule ;
- (vi) a 0-5 or 0-10 newton meter and means of attaching to the rule.

The apparatus, when assembled, will look as shown.



**Note:** If a candidate requires assistance in setting up the apparatus, the candidate number should be reported on the supervisors report form.

**For Question 3**

Each candidate will need:

- (i) a freshly made mixture containing approximately 1 g of powdered copper(II) carbonate and 1 g of powdered aluminium sulfate – well mixed – labelled **X**, supplied in a stoppered test-tube ;
- (ii) filtration apparatus and filter paper ;
- (iii) litmus paper ;
- (iv) 5 test-tubes, one of which should be 150 x 25 mm ;
- (v) a stopper or bung to fit the large (150 x 25 mm) test-tube ;
- (vi) a test-tube rack ;
- (vii) access to the following solutions and labelled as such:

**[C]** aqueous **sodium hydroxide**, concentration about  $1.0 \text{ mol dm}^{-3}$ ,  
**aqueous ammonia**, concentration about  $2.0 \text{ mol dm}^{-3}$ ,  
**hydrochloric acid**, concentration about  $1.0 \text{ mol dm}^{-3}$ ,  
aqueous **barium chloride** concentration about  $1.0 \text{ mol dm}^{-3}$ .

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.**

**May/June 2011**

*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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