



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

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**CO-ORDINATED SCIENCES**

**0654/05**

Paper 5 Practical Test

**October/November 2007**

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.

This document consists of **5** printed pages and **3** blank pages.



\* 6 4 7 5 2 2 1 6 6 4 \*

## Instructions for preparing apparatus

These instructions detail the apparatus, reagents and specimens required by each candidate 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).

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

**Information given to candidates may differ from the content of the instructions.**

*Each candidate will require:*

- (i) six raisins of a similar size;
- (ii) a beaker, labelled **A**, containing purified water and three of the raisins;
- (iii) a beaker, labelled **B**, containing the other three raisins;
- (iv) a pair of tweezers;
- (v) a paper towel;
- (vi) a white tile;

The raisins in beaker **A** should be left to soak in the water overnight (or the weekend) before the examination.

- (vii) 60 cm<sup>3</sup> purified water, labelled **D**
- (viii) 60 cm<sup>3</sup> sodium chloride solution made by dissolving approximately 5 g sodium chloride in 1 dm<sup>3</sup> water (does not need to be purified), labelled **E**;
- (ix) 20 cm<sup>3</sup> glucose solution, made by dissolving approximately 10 g glucose in 1 dm<sup>3</sup> water, labelled **F**;
- (x) 30 cm<sup>3</sup> protein solution, made by dissolving approximately 4 g protein, e.g. albumen, in 1 dm<sup>3</sup> water, labelled **G**;
- (xi) 10 test-tubes, size 125 x 15 mm. If fewer are available there should be the means to wash used tubes;
- (xii) a test-tube rack;
- (xiii) 30 cm<sup>3</sup> Benedict's solution;
- (xiv) a very hot water bath, just below boiling point, and the means to support the test-tubes inside. Several candidates may share the same water bath if this can be done safely without overcrowding;
- (xv) 30 cm<sup>3</sup> biuret solution;
- (xvi) 8 dropper pipettes, or if fewer are available, the means to wash used pipettes;
- (xvii) the usual solutions to enable the test for a chloride to be carried out.

All volumes of solutions are approximate.

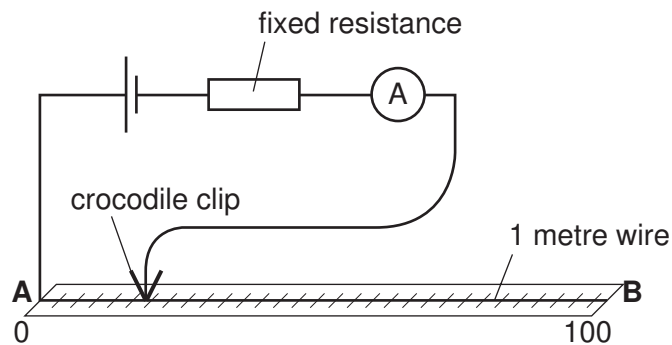
Candidates should have access to extra solutions without penalty.

**For Question 2**

Each candidate will require;

- (i) a 1.5V dry cell with appropriate connections. See note below;
- (ii) an ammeter suitable for reading from 0 to 1 A;
- (iii) 1 metre of bare wire whose resistance/m is between 6.0 and 10.0 ohms, fixed to a board or metre rule or stuck to the bench. A suitable wire would be made from constantan or nichrome;
- (iv) a crocodile clip attached to the lead from the ammeter to allow contact to be made with the wire;
- (v) a metre rule if the wire is not already attached to one;
- (vi) a coil of insulated wire with a suitable resistance to allow the ammeter to show almost full deflection when connected in series with the power supply and the ammeter. This will have a resistance of about 1.5 – 2 ohms;
- (vii) connecting wire as required
- (viii) a card stating, **S**, the resistance / m of the bare wire supplied to the nearest ohm.

The circuit should be set up for each candidate as shown below.



**Fig. 2.1**

**For Question 3**

*Each candidate will require:*

- (i) eight test-tubes, 125 x 15 mm. If fewer are provided, some will require washing;
- (ii) a solution of phenolphthalein indicator. Label this 'solution **P**';
- (iii) the usual solutions to enable tests for a chloride and a sulphate to be carried out. Tests as described in the notes for qualitative analysis;
- (iv) about 10 cm<sup>3</sup> of aqueous zinc sulphate, concentration approximately 0.1 mol dm<sup>-3</sup>;
- (v) the following three solutions. **The identity of these must not be divulged to the candidates,**
  - hydrochloric acid, concentration about 1 mol dm<sup>-3</sup>, labelled 'solution **X**';
  - aqueous sodium hydroxide, concentration about 1 mol dm<sup>-3</sup>, labelled 'solution **Y**';
  - aqueous sodium carbonate, concentration about 0.1 mol dm<sup>-3</sup>, labelled 'solution **Z**'.

Allow each candidate about 10 cm<sup>3</sup> of solutions **X**, **Y** and **Z**.

Spare materials and equipment should be made available and can be provided without penalty.

**Candidates should be made aware of this.**

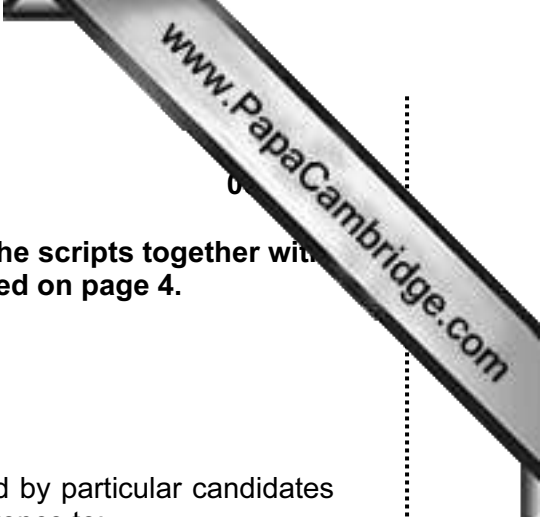
*Information required from the Supervisor:*

**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 4.

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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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