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**COMBINED SCIENCE**

**0653/52**

Paper 5 Practical Test

**May/June 2016**

**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: [info@cie.org.uk](mailto:info@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 **7** printed pages and **1** blank page.

## 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. Only those tests described in the Question Paper should be attempted. 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 attention of Centres is drawn to any local regulations relating to safety, first-aid and disposal of chemicals.

'Hazard Data Sheets', relating to materials used in this examination, should be available from your chemical supplier.

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, the Security of Question Papers and Examination Materials section, and the Practical Examinations in Science Subjects section.

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 [info@cie.org.uk](mailto:info@cie.org.uk), by phone to +44 1223 553554 or by fax to +44 1223 553558.

**Question 1**

Each candidate will require:

- (i) 15 sweetcorn kernels (tinned or defrosted, with no added sugar)
- (ii) 15 peas (tinned or defrosted, with no added sugar)
- (iii) 6 test-tubes (125 mm × 15 mm) and method of supporting them
- (iv) stirring rod
- (v) two 100 cm<sup>3</sup> beakers
- (vi) iodine solution and dropper, labelled **iodine solution**
- [H] (vii) Benedict's solution and dropper, labelled **Benedict's solution**
- [H] (viii) biuret solution and dropper, labelled **biuret solution**
- (ix) access to a water-bath at approximately 80 °C
- (x) paper towels
- (xi) access to distilled water, for rinsing, labelled **distilled water**
- (xii) means of labelling glassware.

Centres may provide fewer test-tubes, the minimum being 3 test-tubes (125 mm × 15 mm). If this is the case, candidates will have to rinse test-tubes with distilled water so extra must be provided.

**Question 2**

Each candidate will require:

- (i) approximately 4 g solid copper(II) carbonate labelled **X**
- (ii) approximately 2.5 g solid copper(II) sulfate labelled **Y**
- (iii) approximately 2.5 g solid copper(II) chloride labelled **Z**
- (iv) approximately 30 cm<sup>3</sup> distilled water labelled **distilled water**
- [H] (v) approximately 40 cm<sup>3</sup> 0.4 mol dm<sup>-3</sup> ammonia solution labelled **ammonia**
- [H] (vi) approximately 5 cm<sup>3</sup> 0.1 mol dm<sup>-3</sup> barium chloride solution labelled **barium chloride**
- [N][H] (vii) approximately 5 cm<sup>3</sup> 0.05 mol dm<sup>-3</sup> silver nitrate solution labelled **silver nitrate**
- [H] (viii) approximately 10 cm<sup>3</sup> limewater labelled **limewater**
- (ix) stirring rod
- (x) small beaker
- (xi) 6 test-tubes (125 mm × 15 mm)
- (xii) 1 hard glass test-tube (125 mm × 15 mm) identified as such
- (xiii) two stands, bosses and clamps
- (xiv) delivery tube to fit the hard glass test-tube
- (xv) Bunsen burner and means to light it.

Centres may provide fewer test-tubes, the minimum being 3 test-tubes (125 mm × 15 mm). If this is the case, candidates will have to rinse test-tubes with distilled water so extra must be provided.

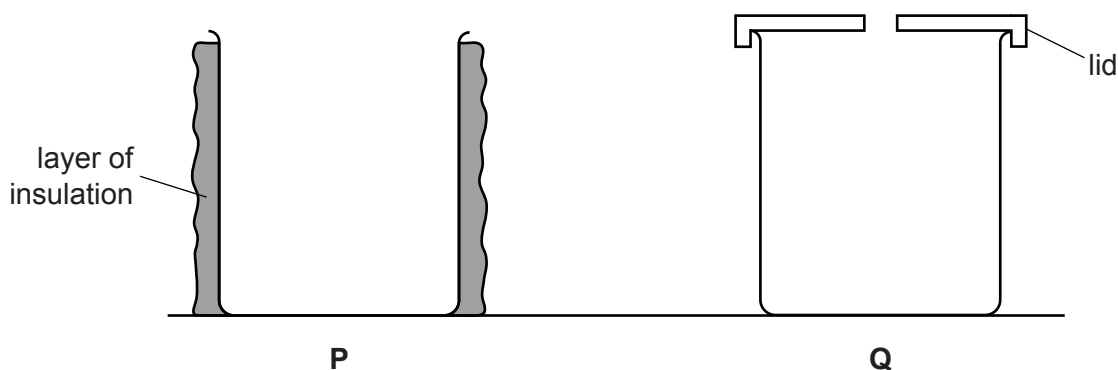
### Question 3

Each candidate will require:

- (i) two 250 cm<sup>3</sup> glass beakers labelled **P** and **Q** (see note 1)
- (ii) 100 or 250 cm<sup>3</sup> measuring cylinder
- (iii) thermometer –10 °C to 110 °C graduated in 1 °C intervals
- (iv) supply of hot water (see notes 2 and 3)
- (v) stopclock.

### Notes

1. The beakers should be supplied as shown in Fig. 3.1.



**Fig. 3.1**

Beaker **P** should have a layer of insulation (e.g. cotton wool, cloth, corrugated cardboard), fastened with rubber bands or tape. The bottom of beaker **P** should **not** be insulated.

Beaker **Q** should have an insulating lid (e.g. a piece of thick card) in which there is a hole to insert the thermometer.

2. Each candidate will require approximately 500 cm<sup>3</sup> of hot water. The hot water should be supplied and maintained at a temperature of approximately 80 °C.
3. Candidates should be warned of the dangers of burns or scalds when using very hot water.
4. Spare beakers and thermometers should be available in case of breakages.

### Action at Changeover

Remove the thermometer and empty the water from the beakers.

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 as mentioned on page 6.**

**May/June 2016**

*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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