Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

COMBINED SCIENCE **0653/52**

Paper 5 Practical Test **October/November 2017**

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 Confidential Instructions, please contact Cambridge stating the Centre number, the nature of the query and the syllabus number quoted above.

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READ THESE INSTRUCTIONS FIRST

These Confidential Instructions detail the apparatus, reagents and specimens required by each candidate for each experiment in this paper.

The Supervisor is **not** allowed to consult the Question Paper before the examination. This teacher should, as part of the preparation of the examination requirements, test the apparatus in order to ensure that it is satisfactory.

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

More material may be issued if required, without penalty, but this should not be necessary. If a candidate breaks any of the apparatus the matter should be rectified and a note made in the Supervisor's Report.

It is assumed that the ordinary apparatus of a science laboratory will be available, including a supply of purified water (distilled or deionised).

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. Suitable eye protection should be provided.

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.

Attention is drawn, in particular, to certain materials used in the examination. The following codes are used where relevant.

C corrosive substance

HH health hazard

F flammable

N hazardous to the aquatic environment

MH moderate hazard

T acutely toxic

O oxidising

Hazard data sheets should be available from your suppliers.

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**.

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

Question 1

Each candidate will require:

(i) a pea seedling (see note 1)

(ii) a hand lens

(iii) a white tile

(iv) a 30 cm ruler graduated in mm

(v) 10 cm^3 seed puree labelled **seed puree** (see note 2)

[N] **(vi)** iodine solution and dropper, labelled **iodine solution**

[C] **(vii)** biuret solution and dropper, labelled **biuret solution**

(viii) 2 test-tubes (125 mm × 15 mm) and a means of supporting them.

Notes

1. Germinate the pea seeds and allow them to germinate until the root and shoot are at least 5 mm long.

2. Take some of the same pea seeds as in note 1 but only soak overnight and liquidise 100 g with 100 cm^3 distilled water to form a runny paste. This should provide sufficient puree for about 10 candidates.

[Turn over

Question 2

Each candidate will require:

(i) approximately 50 cm^3 0.4 $mol\,dm^{-3}$ sodium carbonate solution labelled **H**

[MH] **(ii)** a test-tube (125 mm × 15 mm) containing 1 cm depth of sodium carbonate solid, stoppered and labelled **H**

(iii) approximately 5 cm^3 0.5 $mol\,dm^{-3}$ ammonium sulfate solution labelled **ammonium sulfate**

(iv) approximately 5 cm^3 0.1 $mol\,dm^{-3}$ copper sulfate solution labelled **copper sulfate**

(v) approximately 5 cm^3 0.1 $mol\,dm^{-3}$ iron(III) sulfate solution labelled **iron(III) sulfate**

(vi) approximately 5 cm^3 0.1 $mol\,dm^{-3}$ zinc sulfate solution labelled **zinc sulfate**

(vii) approximately 10 cm^3 1.0 $mol\,dm^{-3}$ hydrochloric acid labelled **hydrochloric acid**

(viii) red litmus paper

(ix) blue litmus paper

(x) a stirring rod

(xi) 5 test-tubes (125 mm × 15 mm) and a means to support them

(xii) Bunsen burner and means to light it

(xiii) test-tube holder or stand and clamp for holding test-tube

(xiv) safety glasses or goggles.

Centres may provide fewer test-tubes, the minimum being 4 test-tubes (125 mm × 15 mm). If this is the case, candidates will have to rinse a test-tube with distilled water which must be provided.

Question 3

Each candidate will require:

(i) a 250 cm^3 graduated beaker – if the beaker is ungraduated, lines should be drawn on the side of the beaker to indicate the 100 cm^3 level and the 200 cm^3 level

(ii) a thermometer, −10 °C to 110 °C graduated in 1 °C intervals

(iii) a supply of hot water (see note 1)

(iv) a stopclock.

Notes

1. Each candidate will require 300 cm^3 of hot water. The hot water must be available throughout the experiment and should be maintained at an approximately constant temperature of between 80 °C and 100 °C.

2. Candidates should be warned of the dangers of burns or scalds when using very hot water.

3. There should be access to spare beakers, thermometers and hot water in case of breakages or spillage.

Action at Changeover

Empty the water from the beaker and check that the apparatus is intact.

[Turn over

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.

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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.

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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 Supervisor)

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 ..... (Supervisor)