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**CO-ORDINATED SCIENCES**

**0654/51**

Paper 5 Practical Test

**October/November 2018**

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

e-mail            info@cie.org.uk  
phone            +44 1223 553554  
fax                +44 1223 553558

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This document consists of **7** printed pages and **1** blank page.

**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

**MH** moderate hazard

**HH** health hazard

**T** acutely toxic

**F** flammable

**O** oxidising

**N** hazardous to the aquatic environment

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 leaf 4–7 cm in length with visible veins and a thick cuticle e.g. holly or laurel
- (ii) 30 cm ruler graduated in mm.

**Question 2**

Each candidate will require:

- (i) a stopclock
- (ii)  $-10^{\circ}\text{C}$  to  $+110^{\circ}\text{C}$  thermometer with  $1^{\circ}\text{C}$  graduations
- (iii) a plastic cup supported in a beaker of suitable size
- [F] (iv) 1.5 g of fresh magnesium powder, labelled **H**
- (v)  $25\text{ cm}^3$  measuring cylinder
- [MH] [N] (vi)  $30\text{ cm}^3$   $0.5\text{ mol dm}^{-3}$  copper sulfate,  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ , labelled **J**
- (vii) a stirring rod
- (viii) 1 test-tube ( $125\text{ mm} \times 15\text{ mm}$ )
- [MH] [N] (ix) approximately  $15\text{ cm}^3$   $1.0\text{ mol dm}^{-3}$  ammonia solution, labelled **ammonia**.

Note that the metals in this experiment should be disposed of in a way that does not harm the environment.

**Question 3**

Each candidate will require:

- (i) a steel spring (see note 1)
- (ii) a clamp, stand and boss
- (iii) a 30 cm or a 50 cm ruler, graduated in millimetres
- (iv) a 100 g mass hanger with four 100 g slotted masses (see note 2)
- (v) a stopclock measuring to 0.01 s.

**Notes**

1. An expendable steel spring is suitable, for example a 55 mm long spring of diameter 15 mm (see [www.philipharris.co.uk](http://www.philipharris.co.uk), catalogue number B8G87194). The spring must be capable of supporting at least 500 g without overstretching.
2. If a mass hanger is not available, a suitable light hook must be provided so that the masses can be suspended from the spring.
3. The clamp must be sufficiently high above the bench that when the 500 g mass is attached to the spring, the bottom of the mass is about 10 cm above the bench.

**Action at changeover**

Remove the masses from the spring and place the spring on the bench.

Check that the spring is not overstretched.

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.**

**October/November 2018**

*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)

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