



**Cambridge International Examinations**  
Cambridge International General Certificate of Secondary Education

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**PHYSICAL SCIENCE**

**0652/05**

Paper 5 Practical Test

**For Examination from 2019**

SPECIMEN CONFIDENTIAL INSTRUCTIONS

**1 hour 15 minutes**

**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 7 which must be completed and returned with the scripts.**

If you have any queries regarding these instructions, please contact CIE

by email: [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

**MH** = moderate hazard

**HH** = health hazard

**T** = acutely toxic

**F** = flammable

**O** = oxidising

**N** = hazardous to the aquatic 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 email to [info@cie.org.uk](mailto:info@cie.org.uk), by phone to +44 1223 553554 or by fax to +44 1223 553558.

**For Question 1**

Each candidate will require

- [HH] (i) homogeneous mixture of the solids copper carbonate,  $\text{CuCO}_3$ , zinc sulfate,  $\text{ZnSO}_4$ ,  
 [C MH N] and manganese(IV) oxide,  $\text{MnO}_2$  in the approximate weight ratio 2 : 2 : 1 labelled **A**  
 [MH] (allow each candidate 2.5g)
- [C MH N] (ii) approximately  $20\text{ cm}^3$   $2.0\text{ mol dm}^{-3}$  aqueous ammonia,  $\text{NH}_3$  labelled **aqueous ammonia**
- (iii) approximately  $30\text{ cm}^3$   $2.0\text{ mol dm}^{-3}$  hydrochloric acid,  $\text{HCl}$  labelled **dilute hydrochloric acid**
- (iv) supply of distilled water
- (v)  $25\text{ cm}^3$  measuring cylinder
- (vi) two small beakers (e.g.  $100\text{ cm}^3$ )
- (vii) filter funnel and at least two filter papers
- (viii) two test-tubes ( $125\text{ mm} \times 15\text{ mm}$ )
- (ix) two large test-tubes ( $150\text{ mm} \times 25\text{ mm}$ )
- (x) means of holding a test-tube
- (xi) stirring rod
- (xii) tripod and gauze
- (xiii) Bunsen burner

**Notes**

- 1 Centres may provide fewer test-tubes, the minimum being one test-tube ( $125\text{ mm} \times 15\text{ mm}$ ) and one large test-tube ( $150\text{ mm} \times 25\text{ mm}$ ). If this is the case, candidates will have to rinse test-tubes with distilled water, which must be provided.

**For Question 2**

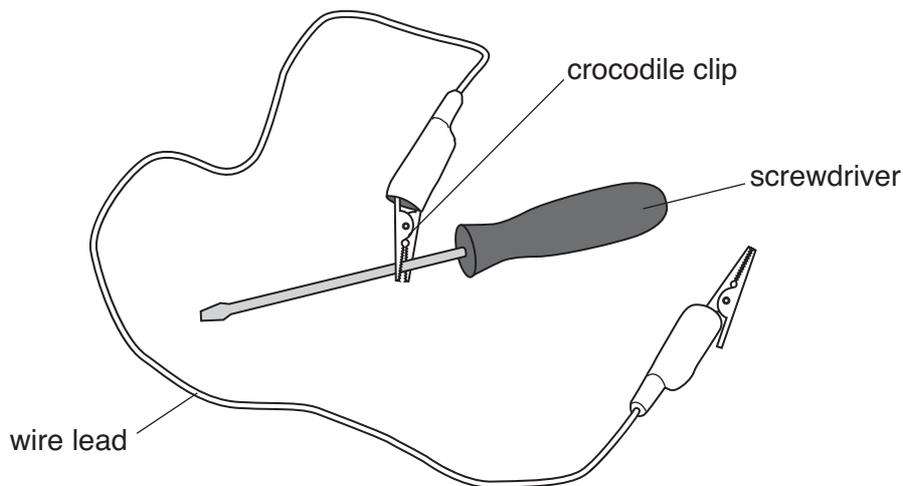
Each candidate will require

- [MH N]** (i) 1 g solid anhydrous copper(II) sulfate,  $\text{CuSO}_4$ , labelled **B**. This can be made by **carefully** heating hydrated copper(II) sulfate,  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ , until it is white/grey but **not** brown or blue
- [MH]** (ii) 1 g solid ammonium chloride,  $\text{NH}_4\text{Cl}$ , labelled **C**
- (iii) 1 g solid sodium chloride,  $\text{NaCl}$ , labelled **D**. This must be in the form of fine crystals
- (iv) approximately  $20\text{ cm}^3$   $0.1\text{ mol dm}^{-3}$  barium nitrate,  $\text{Ba}(\text{NO}_3)_2$ , labelled **aqueous barium nitrate** with a dropper
- [N]** (v) approximately  $20\text{ cm}^3$   $0.05\text{ mol dm}^{-3}$  silver nitrate,  $\text{AgNO}_3$ , labelled **aqueous silver nitrate** with dropper
- [MH]** (vi) approximately  $10\text{ cm}^3$   $0.1\text{ mol dm}^{-3}$  nitric acid,  $\text{HNO}_3$ , labelled **dilute nitric acid** with a dropper
- (vii) supply of distilled water
- (viii)  $25\text{ cm}^3$  measuring cylinder
- (ix) one small beaker (e.g.  $100\text{ cm}^3$ )
- (x)  $-10$  to  $+110\text{ }^\circ\text{C}$  thermometer, capable of measuring to  $1\text{ }^\circ\text{C}$
- (xi) two test-tubes ( $125\text{ mm} \times 15\text{ mm}$ )
- (xii) means of holding a test-tube
- (xiii) stirring rod

**For Question 3**

Each candidate will require

- (i) power supply of approximately 1.5 to 2.0V. Where candidates are supplied with a power supply of variable voltage output, the voltage should be set by the supervisor and taped. Where batteries are used, a supply of fully-charged batteries should be available in addition to the batteries for each candidate
- (ii) a voltmeter capable of measuring to 0.1V, up to 2.0V
- (iii) an ammeter capable of measuring to 0.05A, up to 1.0A
- (iv) switch. This may be an integral part of the power supply
- (v) approximately 105 cm of straight, bare constantan wire of diameter 0.31 mm (30 swg) or 0.27 mm (32 swg), taped to a metre rule at two places (between the 0 and 5 cm mark and between the 95 cm and 100 cm mark). The zero end of the wire must be labelled **X**, the other end, **Y**
- (vi) two suitable terminals (e.g. crocodile clips) attached to the constantan wire at ends **X** and **Y** of the metre rule, so that the power supply, switch and ammeter can be connected to the resistance wire
- (vii) sliding contact labelled **C**. This may be a crocodile clip connected to a lead and clipped to a small screwdriver (see Fig. 3.1)



**Fig. 3.1**

## Notes

1 The circuit shown in Fig. 3.2 must be set up for candidates.

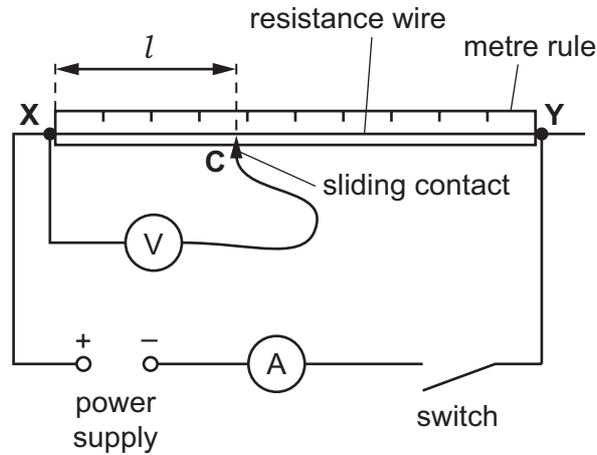


Fig. 3.2

### Action at changeover

Check that the circuit is still connected correctly. If batteries are used, check that they are adequately charged and replace if necessary.

### For Question 4

No apparatus is required for this question.

### 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.

Spare materials and equipment should be available and can be provided without penalty. Candidates should be made aware of this.

**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.**

*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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