
COMBINED SCIENCE

0653/52

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.

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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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

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) 10 cm³ of 5% starch solution and 1% protein suspension in equal volumes, labelled **A** (see note 1)
- (ii) 10 cm³ of 5% glucose solution, labelled **B** (see note 1)
- [MH] (iii) Benedict's solution, labelled **Benedict's solution**
- (iv) biuret solution, labelled **biuret solution**
- (v) iodine solution with dropper, labelled **iodine solution**
- (vi) access to a hot water-bath of about 80 °C
- (vii) six test-tubes (125 mm × 15 mm) (see note 2)
- (viii) a means to support test-tubes.

Notes

1. The solutions should be made within 24 hours of the examination.
2. Centres may provide fewer test-tubes, the minimum being three test-tubes. If this is the case, candidates will have to rinse test-tubes with distilled water so this must be provided.

Question 2

Each candidate will require:

- [MH] [N] (i)** about 1.5g copper carbonate in a hard-glass test-tube (125 mm × 15 mm), labelled **copper carbonate**
- (ii)** about 1.5g magnesium carbonate in a hard-glass test-tube (125 mm × 15 mm), labelled **magnesium carbonate**
- (iii)** about 1.5g zinc carbonate in a hard-glass test-tube (125 mm × 15 mm), labelled **zinc carbonate**
- [MH] (iv)** 20 cm³ limewater, labelled **limewater**
- (v)** delivery tube with bung to fit hard-glass test-tubes in **(i)**, **(ii)** and **(iii)**
- (vi)** test-tube (125 mm × 15 mm)
- (vii)** stopclock
- (viii)** a means to support test-tubes
- (ix)** Bunsen burner and means to light it
- (x)** test-tube holder or stand and clamp for holding test-tube.

Notes

The Supervisor should check that the apparatus for heating the carbonates is disconnected immediately after heating to avoid suckback of the limewater into the hot hard-glass test-tube.

Question 3

Each candidate will require:

- (i) d.c. power supply of approximately 1.5–2.0 V (see note 1)
- (ii) voltmeter capable of measuring the supply voltage with a minimum resolution of 0.1 V
- (iii) ammeter capable of measuring up to 1.0 A with a minimum resolution of 0.05 A
- (iv) switch – this may be an integral part of the power supply
- (v) a metre rule with a millimetre scale (see note 2)
- (vi) approximately 105 cm of straight, bare constantan wire of diameter 0.31 mm (30 swg) or 0.27 mm (32 swg) (see note 2)
- (vii) 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 (see note 2)
- (viii) sliding contact labelled **C**. This may be a crocodile clip connected to a lead.

Notes

1. Where candidates are supplied with a power supply of variable voltage output, the voltage should be set by the supervisor and fixed e.g. taped.
2. The wire should be taped to a metre rule at two places (between the 0 cm 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 must be labelled **Y**.
3. The circuit shown in Fig. 3.1 must be set up for candidates.

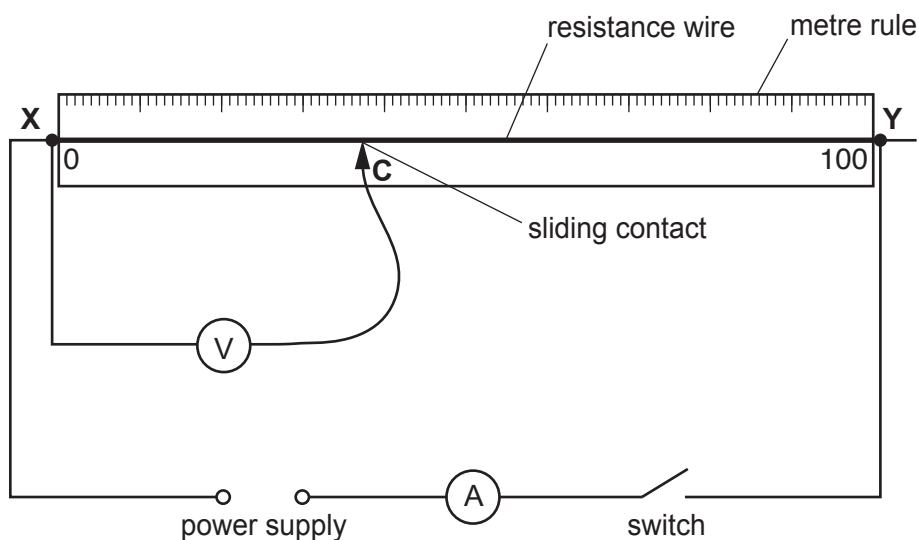


Fig. 3.1

Action at changeover

Check that the circuit is still connected correctly. If dry cells are used as the power source, check that they are adequately charged.

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.

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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

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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