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

**CO-ORDINATED SCIENCES** **0654/52**

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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**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)** 10 $cm^3$ of 5% starch solution and 1% protein suspension in equal volumes, labelled **A** (see note 1)

**(ii)** 10 $cm^3$ of 5% glucose solution, labelled **B** (see note 1)

**(iii)** 10 $cm^3$ of 5% starch solution, labelled **C** (see note 1)

**[MH][N] (iv)** Benedict's solution, labelled **Benedict's solution**

**[C] (v)** biuret solution, labelled **biuret solution**

**(vi)** iodine solution with dropper, labelled **iodine solution**

**(vii)** access to a hot water-bath of about 80 °C

**(viii)** 9 test-tubes 125 mm × 15 mm

**(ix)** means of supporting 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, which must be provided.

**Question 2**

Each candidate will require:

**(i)** approximately 1.5 g of copper carbonate in a hard-glass test-tube (125 mm × 15 mm), labelled **copper carbonate**

**(ii)** approximately 1.5 g of magnesium carbonate in a hard-glass test-tube (125 mm × 15 mm), labelled **magnesium carbonate**

**(iii)** approximately 1.5 g of zinc carbonate in a hard-glass test-tube (125 mm × 15 mm), labelled **L**

**[MH]** **(iv)** approximately 20 $cm^3$ of limewater, labelled **limewater**

**[MH]** **(v)** approximately 30 $cm^3$ of 1.0 mol $dm^{-3}$ dilute sulfuric acid, labelled **sulfuric acid**

**(vi)** approximately 40 $cm^3$ of 1.0 mol $dm^{-3}$ ammonia solution, labelled **ammonia solution**

**(vii)** 1 delivery tube to fit hard-glass test-tubes in **(i)**, **(ii)** and **(iii)**

**(viii)** 1 test-tube (125 mm × 15 mm)

**(ix)** 1 large test-tube (150 mm × 25 mm)

**(x)** a 10 $cm^3$ or a 25 $cm^3$ measuring cylinder (or test-tube with a line marked at 10 $cm^3$)

**(xi)** a stopclock

**(xii)** a means to support test-tubes

**(xiii)** a Bunsen burner and means to light it

**(xiv)** a 100 $cm^3$ beaker

**(xv)** a stirring rod

**(xvi)** a filter funnel

**(xvii)** filter papers

**Question 3**

Each candidate will require:

**(i)** a power supply of approximately 1.5 – 2.0 V. Where candidates are supplied with a power supply of variable voltage output, the voltage should be set by the supervisor and taped

**(ii)** a voltmeter capable of measuring the supply voltage with a minimum resolution of 0.1 V

**(iii)** an ammeter capable of measuring up to 1.0 A with a minimum resolution of 0.05 A

**(iv)** a 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) (see note 1)

**(vi)** a wooden or plastic metre rule, graduated in mm

**(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)** a sliding contact labelled **C**. This may be a crocodile clip connected to a lead.

**Notes**

**1.** The wire should be taped to the 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**.

**2.** The circuit shown in Fig. 3.1 must be set up for the candidates.

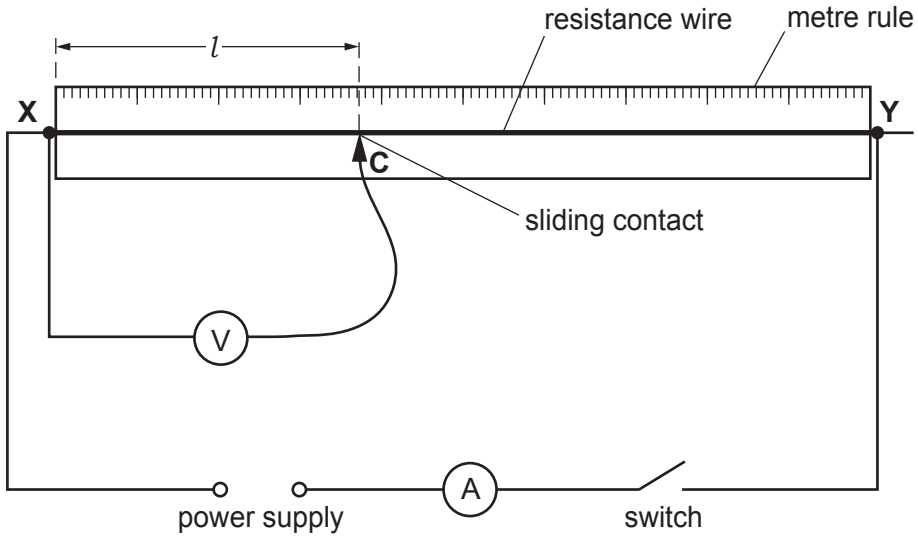


**Fig. 3.1**

**Action at changeover**

Check that the circuit is still connected correctly. If dry cells are used as the power source, check that they remain adequately charged during the examination. Spare cells should be available.

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.**

**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)