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Cambridge Assessment International Education

Cambridge IGCSE™

COMBINED SCIENCE **0653/52**

Paper 5 Practical Test **May/June 2020**

CONFIDENTIAL INSTRUCTIONS



This document gives details of how to prepare for and administer the practical exam.

The information in this document and the identity of any materials supplied by Cambridge International are confidential and must NOT reach candidates either directly or indirectly.

The supervisor must complete the report at the end of this document and return it with the scripts.

INSTRUCTIONS

- If you have any queries regarding these confidential instructions, contact Cambridge International stating the centre number, the syllabus and component number and the nature of the query.
  email info@cambridgeinternational.org
  phone +44 1223 553554

This document has **8** pages. Blank pages are indicated.

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General information about practical exams

Centres must follow the guidance on science practical exams given in the *Cambridge Handbook*.

Safety

Supervisors must follow national and local regulations relating to safety and first aid.

Only those procedures described in the question paper should be attempted.

Supervisors must inform candidates that materials and apparatus used in the exam should be treated with caution. Suitable eye protection should be used where necessary.

The following hazard codes are used in these confidential instructions, 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 relating to substances used in this exam should be available from your chemical supplier.

Before the exam

- The packets containing the question papers must **not** be opened before the exam.
- It is assumed that standard school laboratory facilities, as indicated in the *Guide to Planning Practical Science*, will be available.
- Spare materials and apparatus for the tasks set must be available for candidates, if required.

During the exam

- It must be made clear to candidates at the start of the exam that they may request spare materials and apparatus for the tasks set.
- Where specified, the supervisor **must** perform the experiments and record the results as instructed. This must be done **out of sight** of the candidates, using the same materials and apparatus as the candidates.
- Any assistance provided to candidates must be recorded in the supervisor's report.
- If any materials or apparatus need to be replaced, for example, in the event of breakage or loss, this must be recorded in the supervisor's report.

After the exam

- The supervisor must complete a report for each practical session held and each laboratory used.
- Each packet of scripts returned to Cambridge International must contain the following items:
    - the scripts of the candidates specified on the bar code label provided
    - the supervisor's results relevant to these candidates
    - the supervisor's reports relevant to these candidates
    - seating plans for each practical session, referring to each candidate by candidate number
    - the attendance register.

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Specific information for this practical exam

During the exam, the supervisor (NOT the invigilator) must do the experiments in Questions 1, 2 and 3 and record the results on a spare copy of the question paper, clearly labelled 'supervisor's results'.

For Question 1

Each candidate will require:

(i) 25 cm^3 catalase solution in a beaker labelled **catalase** (see note 1)

[MH] **(ii)** 100 cm^3 beaker approximately half-filled with 5% hydrogen peroxide solution labelled **5%**

(iii) 100 cm^3 beaker approximately half-filled with 4% hydrogen peroxide solution labelled **4%**

(iv) 100 cm^3 beaker approximately half-filled with 3% hydrogen peroxide solution labelled **3%**

(v) 100 cm^3 beaker approximately half-filled with 2% hydrogen peroxide solution labelled **2%**

(vi) 100 cm^3 beaker approximately half-filled with 1% hydrogen peroxide solution labelled **1%**

(vii) 10 filter paper disks (approximately 5 mm diameter) in a small container

(viii) 2 paper towels

(ix) forceps

(x) stop-clock.

Notes

1. Catalase solution can be prepared by finely chopping 100 g peeled potato, blending it in 100 cm^3 distilled water and then filtering through a coarse filter, such as muslin. This should be prepared immediately prior to the exam and supplied to candidates at room temperature.

2. At changeover, replace **(i)** to **(viii)**.

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For Question 2

Each candidate will require:

	(i)	50 cm^3 of 1.0 mol dm^{-3} hydrochloric acid labelled **dilute hydrochloric acid**
[C][MH][N]	**(ii)**	30 cm^3 of 0.5 mol dm^{-3} copper sulfate solution labelled **aqueous copper sulfate**
[F]	**(iii)**	3 spatula amounts of magnesium powder labelled **magnesium powder**
[F]	**(iv)**	3 spatula amounts of iron powder labelled **iron powder**
[F][N]	**(v)**	2 spatula amounts of zinc powder labelled **zinc powder**
	(vi)	2 spatula amounts of copper powder labelled **copper powder**
	(vii)	6 large test-tubes (150 mm × 25 mm) and a means to support them
	(viii)	10 cm^3 measuring cylinder
	(ix)	stirring thermometer, –10 °C to +110 °C with 1 °C graduations
	(x)	stop-clock
	(xi)	2 dropping pipettes
	(xii)	spatula
	(xiii)	access to paper towels
	(xiv)	access to distilled water.

Notes

1. At changeover, provide 6 clean test-tubes as given in **(vii)** and replace **(i)** to **(vi)**. If other apparatus is contaminated please replace.

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For Question 3

Each candidate will require:

(i) power source of approximately 1.5–2 V d.c. (see note 1)

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

(iii) ammeter capable of measuring currents up to 1 A with a minimum resolution of 0.05 A

(iv) 1.05 m length of bare constantan wire of diameter 0.20 mm (36 swg) (see note 2)

(v) switch – this can be an integral part of the power supply

(vi) sufficient leads and crocodile clips to set up the circuit as shown in Fig. 3.1 (see note 3).

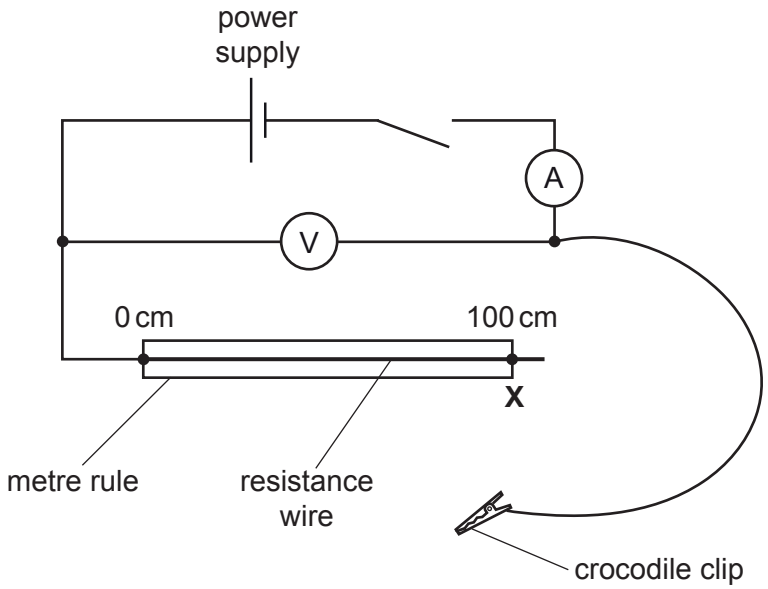

Fig. 3.1

Notes

1. Where candidates are supplied with a power source with a variable output voltage, the voltage setting should be set by the supervisor and fixed (e.g. taped).

2. The wire should be taped to a metre rule at both ends. The first 10 cm of the wire should be covered with insulating tape. The tape at the other end of the metre rule should be between 90–95 cm so that there is bare wire at the 100 cm mark.

3. The circuit should be set up for candidates by the supervisor. The switch should be open.

4. At changeover, disconnect the crocodile clip from the wire, if necessary. Check that the switch is open and if dry cells are used, check that they still retain sufficient energy and replace if necessary.

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For Question 4

No apparatus is required for this question.

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Supervisor's report

Syllabus and component number | | | | | / | | |

Centre number | | | | | |

Centre name .....

Time of the practical session .....

Laboratory name/number .....

Give details of any difficulties experienced by the centre or by candidates (include the relevant candidate names and candidate numbers).

You must include:

- any difficulties experienced by the centre in the preparation of materials
- any difficulties experienced by candidates, e.g. due to faulty materials or apparatus
- any specific assistance given to candidates.

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Question 3

Please record in the space below the type of power supply used for Question 3.

Declaration

1 Each packet that I am returning to Cambridge International contains the following items:

- ☐ the scripts of the candidates specified on the bar code label provided
- ☐ the supervisor's results relevant to these candidates
- ☐ the supervisor's reports relevant to these candidates
- ☐ seating plans for each practical session, referring to each candidate by candidate number
- ☐ the attendance register.

2 Where the practical exam has taken place in more than one practical session, I have clearly labelled the supervisor's results, supervisor's reports and seating plans with the time and laboratory name/ number for each practical session.

3 I have included details of difficulties relating to each practical session experienced by the centre or by candidates.

4 I have reported any other adverse circumstances affecting candidates, e.g. illness, bereavement or temporary injury, directly to Cambridge International on a *special consideration form*.

Signed ..... (supervisor)

Name (in block capitals) .....

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