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Cambridge Assessment International Education

# Cambridge IGCSE™

**COMBINED SCIENCE** **0653/51**

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)** agar block, minimum 2 cm × 2 cm × 3 cm, stained with universal indicator (UI) to give a green or blue colour (see note 1)

**(ii)** universal indicator pH chart

**(iii)** 200 $cm^3$ 1.0 mol $dm^{-3}$ hydrochloric acid in a beaker labelled **dilute hydrochloric acid**

**(iv)** three 250 $cm^3$ beakers

**(v)** stop-clock

**(vi)** white tile

**(vii)** knife

**(viii)** 30 cm ruler graduated in mm.

**Notes**

1. The agar can be made up using 2% technical agar (do not use nutrient agar) and stained with sufficient UI to give a green/blue colour. A few drops of 1.0 mol $dm^{-3}$ NaOH can be added to obtain the green/blue colour (approximately pH 8).

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**For Question 2**

Each candidate will require:

| | | |
|---|---|---|
| **[MH]** | **(i)** | 150 $cm^3$ 0.3 mol $dm^{-3}$ sodium hydroxide solution labelled **aqueous sodium hydroxide** |
| | **(ii)** | 100 $cm^3$ 1.2 mol $dm^{-3}$ hydrochloric acid labelled **dilute hydrochloric acid** |
| | **(iii)** | 5 $cm^3$ water, which is adjusted to turn methyl orange indicator orange and labelled **solution A** |
| **[F][MH][HH][T][C][N]** | **(iv)** | methyl orange in a bottle with a dropping pipette labelled **MO indicator** |
| | **(v)** | access to silver nitrate 0.05 mol $dm^{-3}$ in a bottle with dropping pipette labelled **aqueous silver nitrate** |
| **[C]** | **(vi)** | access to nitric acid 1.0 mol $dm^{-3}$ labelled **dilute nitric acid** |
| | **(vii)** | 4 test-tubes (125 mm × 15 mm) and a means to support them |
| | **(viii)** | 50 $cm^3$ burette |
| | **(ix)** | small funnel for use with burette |
| | **(x)** | stand, boss and clamp to hold the burette in **(viii)** or burette stand |
| | **(xi)** | conical flask |
| | **(xii)** | 25 $cm^3$ measuring cylinder |
| | **(xiii)** | 10 $cm^3$ measuring cylinder |
| | **(xiv)** | white tile |
| | **(xv)** | teat pipette |
| | **(xvi)** | evaporating basin |
| | **(xvii)** | Bunsen burner and a means to light it |
| | **(xviii)** | tripod |
| | **(xix)** | gauze |
| | **(xx)** | heatproof mat |
| | **(xxi)** | tongs |
| | **(xxii)** | access to distilled/deionised water. |

**Notes**

1. At changeover, empty the burette.

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**For Question 3**

Each candidate will require:

**(i)** semi-circular glass block diameter approximately 90 mm × 16 mm thick (see note 1)

**(ii)** sheet of white A4 paper with a hole punched in one corner

**(iii)** ray box (and power supply) with single slit to make narrow beam of light (see note 2)

**(iv)** protractor

**(v)** 30 cm ruler

**(vi)** piece of string/treasury tag to attach A4 paper to examination paper.

**Notes**

1. The block can be either glass or perspex. If a perspex block is used candidates should be advised that this produces the same results as a glass block.

2. It is not necessary to provide a darkened room for this experiment but supervisors should make sure that it is possible to see the beam of light emerging from the semi-circular glass block when a thin ray of light is shone through the block.

3. At changeover, check that the ray box is switched off and place a new sheet of A4 paper on the bench.

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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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**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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