Cambridge Assessment International Education

Cambridge IGCSE™

COMBINED SCIENCE **0653/51**

Paper 5 Practical Test **May/June 2024**

CONFIDENTIAL INSTRUCTIONS

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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.

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.

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'.

Apparatus and chemicals for Question 1

Each candidate will require the following materials and apparatus. Labels do **not** need to include concentrations.

low hazard	● 10 cm^3 of 1.0% starch solution in a beaker, labelled **starch**	See Note 1
[MH][HH][C]	● 10 cm^3 of 1.0% amylase solution in a beaker, labelled **amylase**	See Note 2
[MH]	● 5 cm^3 of 2.0% copper(II) sulfate solution in a beaker, labelled **copper sulfate**	See Note 3
	● 5 cm^3 of iodine solution, labelled **iodine**	See Note 4
	● 4 × test-tubes, approximately 125 mm × 16 mm, and a means to support them	
	● 2 × 5 cm^3 syringes	
	● 1 cm^3 syringe	
	● spotting tile, with at least 12 wells	See Note 5
	● 2 × dropping pipettes	
	● thermometer, –10 °C to +110 °C with 1 °C graduations	
	● 250 cm^3 beaker, labelled **water-bath**	
	● access to hot water at approximately 50 °C	
	● means of labelling glassware and spotting tile, e.g. marker pen	
	● stop-clock or stop-watch (or wall-clock or wrist-watch), to measure to an accuracy of 1 s	
	● supply of paper towels	

Notes

1. 1.0% starch solution
   To prepare the 1.0% starch solution add a few drops of distilled water to 1.0 g starch in a beaker and mix to make a paste. Add 80 cm^3 distilled water and heat until a clear solution is obtained. Make up to 100 cm^3 with more distilled water.

2. 1.0% amylase solution
   To prepare the 1.0% amylase solution dissolve 1.0 g amylase powder in 80 cm^3 distilled water and make up to 100 cm^3 with more distilled water.

3. 2.0% copper(II) sulfate solution
   To prepare the 2.0% copper(II) sulfate dissolve 2.0 g copper(II) sulfate in 80 cm^3 distilled water and make up to 100 cm^3 with more distilled water.

4. iodine solution
   Standard 0.05 mol / dm^3 iodine solution as used for food testing is suitable.

5. spotting tile
   More than one spotting tile may be used to obtain 12 wells. Candidates must be advised if this change is made.

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'.

Apparatus and chemicals for Question 2

Each candidate will require the following materials and apparatus. Labels do **not** need to include concentrations.

[MH]	● 300 cm^3 of 1.0 mol dm^{-3} dilute sulfuric acid, labelled **dilute sulfuric acid**	
low hazard	● 10 g of powdered sodium hydrogencarbonate in a sealed bottle or a beaker sealed with plastic film, labelled **sodium hydrogencarbonate**	See Note 1
	● stop-watch or stop-clock (or wall-clock or wrist-watch), to measure to an accuracy of 1 s	
	● glass rod suitable for stirring	
	● 50 cm^3 measuring cylinder	
	● spatula	See Note 1
	● 250 cm^3 glass beaker	
	● supply of paper towels	
	● access to distilled water	

Note

1. The candidates must be able to remove samples of sodium hydrogencarbonate from the bottle using the spatula.

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'.

Apparatus and chemicals for Question 3

Each candidate will require the following materials and apparatus.

- 2 × identical 250 cm^3 beakers, each beaker filled to the 100 cm^3 mark with water at room temperature, labelled **A** and **B** — See Note 1
- 100 cm^3 measuring cylinder, filled to between 90 and 100 cm^3 with water at room temperature — See Note 1
- rectangular wooden block, approximately 2 cm × 3 cm × 4 cm — See Note 2
- 30 cm ruler, graduated in mm
- supply of paper towels

Notes

1. If the beakers and / or measuring cylinder are labelled in ml, a card should be placed next to the glassware stating that '1 ml = 1 cm^3'.

2. The wooden block should be made of a softwood and it should be low enough density that it will float on water. Do **not** use very low density wood such as balsa. Spare blocks should be available in case the blocks become waterlogged during the examination. The block must fit inside the mouth of a 250 cm^3 beaker.

Action at changeover

Check that the beakers and measuring cylinder are refilled to the specified levels.

Dry the wooden block. Replace with a new block if it is waterlogged.

Apparatus and chemicals for Question 4

No apparatus or chemicals are required for this question.

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.

Declaration

1 Each packet that I am returning to Cambridge International contains all of 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) .....