



Cambridge IGCSE™

COMBINED SCIENCE

0653/52

Paper 5 Practical Test

February/March 2024

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.

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, 3 and 4 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.

- 7 × hard glass test-tubes, 125 mm × 16 mm See Note 1
- 1 × hard glass test-tube, 125 mm × 16 mm See Note 1
- clamp, boss and stand See Note 1
- elastic band See Note 1
- 2 × 250 cm³ beakers See Note 1
- supply of hot water at approximately 80 °C
- 2 × thermometers, –10 °C to +110 °C with 1 °C graduations, suitable for stirring
- 5 × paper towels
- stop-clock

Note

- 1 Seven test-tubes should be grouped together and held in position using an elastic band as shown in Fig. 1.1. These should be placed in an empty beaker.

A single test-tube should be placed in a clamp and held in the middle of an empty beaker, as shown in Fig. 1.1.

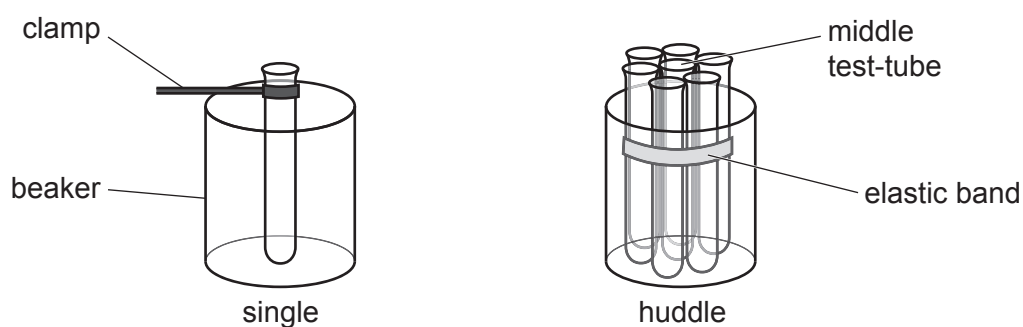


Fig. 1.1

Action at changeover

Empty the test-tubes and reassemble as shown in Fig. 1.1.

During the exam, the supervisor (**not** the invigilator) must do the experiments in Questions 1, 3 and 4 and record the results on a spare copy of the question paper, clearly labelled 'supervisor's results'.

Apparatus and chemicals for Question 2

No apparatus or chemicals are required for this question.

Apparatus and chemicals for Question 3

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

- 25 cm³ of 0.5 mol dm⁻³ aqueous copper(II) chloride in a stoppered container labelled **H**
- 0.4 g of aluminium foil pieces labelled **aluminium foil** See Note 1
- 3 × dropping pipettes
- thermometer –10 °C to +110 °C with 1 °C graduations suitable for stirring
- boiling tube (approximately 150 mm × 25 mm) and a means to support it
- 3 × test-tubes (approximately 125 mm × 16 mm) and means to support them
- filter funnel
- 2 × filter papers to fit filter funnel
- 10 cm³ measuring cylinder
- [C] ● 10 cm³ of 1 mol dm⁻³ dilute nitric acid labelled **dilute nitric acid** See Note 2
- [MH][N] ● 10 cm³ of 1 mol dm⁻³ aqueous ammonia labelled **aqueous ammonia** See Note 2
- 3 cm³ of 0.05 mol dm⁻³ aqueous silver nitrate labelled **aqueous silver nitrate** See Notes 2 and 3
- access to paper towels

Notes

- 1 The aluminium foil needs to be provided as small pieces, each piece no more than 1 cm² in area. The pieces do not need to be of the same size or shape.
- 2 These reagents may be shared by groups of **no more than** four candidates.
- 3 The reagent should be provided in a bottle with a dropper or supplied with a separate dropping pipette.

During the exam, the supervisor (**not** the invigilator) must do the experiments in Questions 1, 3 and 4 and record the results on a spare copy of the question paper, clearly labelled 'supervisor's results'.

Apparatus and chemicals for Question 4

Each candidate will require the following materials and apparatus.

- d.c. power source of approximately 2.5V to 3.0V See Notes 1 and 2
- 2.5V, 0.2A lamp, or similar, in a suitable holder
- voltmeter capable of measuring the supply voltage with a resolution of at least 0.1V See Note 3
- ammeter capable of reading up to 1.00A with a resolution of at least 0.02A See Note 3
- switch, may be an integral part of the power supply
- wooden or plastic metre rule graduated in millimetres
- approximately 105cm of straight, bare constantan wire of diameter 0.38mm (28 swg) See Note 4
- a suitable terminal (e.g. a crocodile clip) attached to the constantan wire at the 0 cm end of the metre rule, so that a connecting lead can be attached to the resistance wire
- a crocodile clip connected to a lead, to act as a sliding contact

Assemble the circuit as shown in Fig. 4.1.

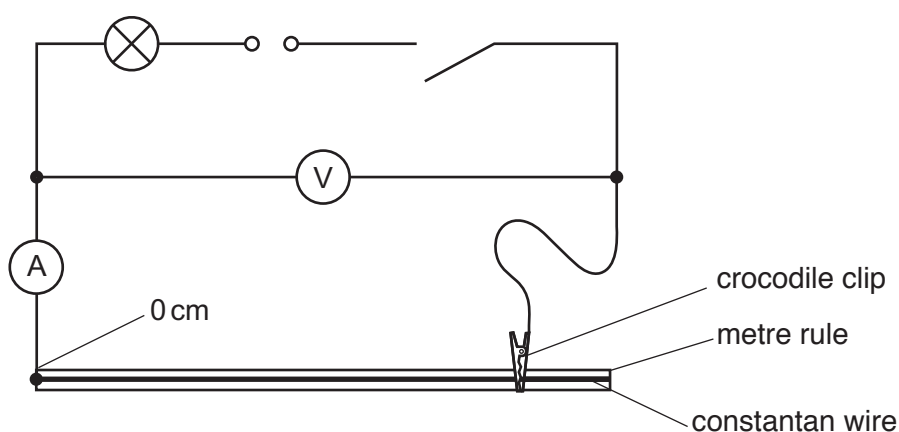


Fig. 4.1

Notes

- 1 If candidates are supplied with a power source of variable voltage output, the voltage should be set by the supervisor and fixed (e.g. taped).
- 2 If dry cells are used, check that they are adequately charged. Spare cells should be available.
- 3 Either analogue or digital meters are suitable. Any variable settings should be set by the supervisor and fixed (e.g. taped).
- 4 Constantan wire must be taped to the metre rule at two places (between the zero and 5.0 cm mark and between the 95.0 and 100.0 cm mark).

Action at changeover

Check that the circuit is still connected correctly, working and switched off.

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced online in the Cambridge Assessment International Education Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download at www.cambridgeinternational.org after the live examination series.

Cambridge Assessment International Education is part of Cambridge Assessment. Cambridge Assessment is the brand name of the University of Cambridge Local Examinations Syndicate (UCLES), which is a department of the University of Cambridge.

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.

Space for supervisor to record results, if relevant, e.g. temperature of the laboratory; results for Question 1.

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)