



Cambridge IGCSE™

CO-ORDINATED SCIENCES

0654/52

Paper 5 Practical Test

October/November 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 **12** pages. Blank pages are indicated.

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, 4, 5 and 6 and record the results on a spare copy of the question paper, clearly labelled 'supervisor's results'.

For Question 1

Each student will require:

- (i) five test-tubes (125 mm × 15 mm) and means to support them
- (ii) means of labelling glassware
- (iii) 1 × 2 cm³ syringe without needle
- (iv) 2 × 1 cm³ syringe without needle
- (v) Benedict's solution (MH) labelled **solution G** (see note 1)
- (vi) access to a hot water-bath at about 80 °C
- (vii) at least 5 cm³ of distilled/de-ionised water in a container labelled **0.0%** (see note 2)
- (viii) at least 5 cm³ of 5 g dm⁻³ aqueous glucose in a container labelled **0.5%** (see note 2)
- (ix) at least 5 cm³ of 10 g dm⁻³ aqueous glucose in a container labelled **1.0%** (see note 2)
- (x) at least 5 cm³ of 20 g dm⁻³ aqueous glucose in a container labelled **2.0%** (see note 2)
- (xi) at least 5 cm³ of 5 g dm⁻³ aqueous glucose in a container labelled **U**
- (xii) stop-clock
- (xiii) paper towels.

Note 1

The container for the Benedict's solution should allow access by a 2 cm³ syringe.

Note 2

The containers for the aqueous glucose should allow access by a 1 cm³ syringe.

For Question 2

No apparatus is required for this question.

For Question 3

Each candidate will require:

- [MH] (i) 4 g of a mixture containing 2 g of ammonium carbonate and 2 g of zinc carbonate labelled **J**
- [MH] (ii) 10 cm³ of approximately 2.0 mol dm⁻³ hydrochloric acid labelled **dilute hydrochloric acid**
- [MH] (iii) 10 cm³ of limewater suitable for testing for carbon dioxide labelled **limewater**
- (iv) red and blue litmus papers
- (v) splint
- (vi) Bunsen burner
- (vii) means of lighting Bunsen burner
- (viii) three dropping pipettes
- (ix) 25 cm³ measuring cylinder
- (x) six test-tubes (approximately 125 mm × 15 mm) and a means to support them
- (xi) boiling tube (approximately 150 mm × 25 mm) and a means to support it
- (xii) holder suitable for use with boiling tube in (xi)
- (xiii) apparatus that the candidates are familiar with to test for carbon dioxide
- [C] (xiv) 10 cm³ of 2.0 mol dm⁻³ sodium hydroxide labelled as **aqueous sodium hydroxide**
- (xv) two pieces of filter paper
- (xvi) filter funnel
- (xvii) 100 cm³ glass beaker
- (xviii) stirring rod
- [C][MH][N] (xix) 10 cm³ of 2.0 mol dm⁻³ aqueous ammonia labelled as **aqueous ammonia**
- (xx) spatula
- (xxi) access to distilled or deionised water.

For Question 4

Each candidate will require:

- [MH] (i) approximately 175 cm³ of 2.0 mol dm⁻³ hydrochloric acid labelled as **dilute hydrochloric acid**
- [F] (ii) approximately 20 cm of magnesium ribbon
(iii) 100 cm³ glass beaker
(iv) 25 cm³ measuring cylinder
(v) pair of scissors
(vi) 15 or 30 cm ruler with mm divisions
(vii) access to distilled water or deionised water
(viii) paper towels
(ix) thermometer, -10 °C to 110 °C with 1 °C graduations.

For Question 5

Each candidate will require:

- (i) steel spring (see note 1)
(ii) clamp, stand and boss
(iii) 30 cm or a 50 cm rule, graduated in millimetres
(iv) masses of 200 g and 300 g (see note 2)
(v) stop-watch.

Note 1

An expendable steel spring is suitable, for example a 55 mm long spring of diameter 15 mm (see www.philipharris.co.uk, catalogue number B8G87194).
The spring must be capable of supporting at least 300 g without overstretching.

Note 2

A 100 g mass hanger with an extra 2 × 100 g slotted masses is ideal.
If these are not available, a suitable light hook must be provided so that the masses can be suspended from the spring.

Action at changeover

Remove the spring and the masses from the clamp.

For Question 6

Each candidate will require:

- (i) clamp, boss and stand
- (ii) thermometer, -10°C to 110°C with 1°C graduations
- (iii) stop-watch
- (iv) 250 cm^3 beaker (see note 1)
- (v) supply of hot water – candidates will need approximately 200 cm^3 each (see note 2)

Note 1

If the beaker does not have a graduation at 200 cm^3 then a line must be drawn on the outside of the beaker at 200 cm^3 .

Note 2

The hot water should have a temperature of between 80°C and 100°C . The hot water should be supplied by the supervisor and be ready for immediate use.

Note 3

The thermometer is to be held vertically using a clamp, boss and stand and set up by the supervisor. Ensure that the clamp does not obscure the temperature scale of the thermometer. See Fig. 6.1.

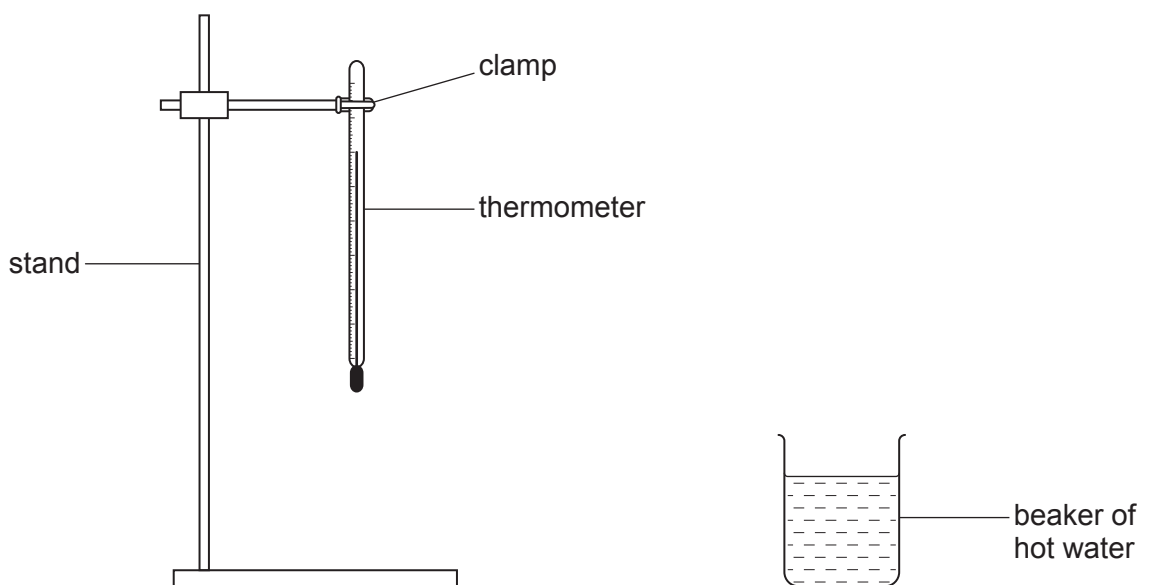


Fig. 6.1

Note 4

Candidates must be able to move the thermometer into the water easily and safely.

Note 5

Candidates should be warned of the dangers of burns or scalds when using very hot water.

Action at changeover

The water must be poured away at the end of the experiment.

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Supervisor's report

Syllabus and component number

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Centre number

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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 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)