



# Cambridge IGCSE™

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**CO-ORDINATED SCIENCES**

**0654/52**

Paper 5 Practical Test

**May/June 2021**

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.**

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## 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](mailto:info@cambridgeinternational.org)  
phone      +44 1223 553554

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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:

<b>C</b>	corrosive	<b>MH</b>	moderate hazard
<b>HH</b>	health hazard	<b>T</b>	acutely toxic
<b>F</b>	flammable	<b>O</b>	oxidising
<b>N</b>	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, 6 and 7 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) 10 cm<sup>3</sup> of a solution containing equal volumes of 5% starch solution and 5% glucose solution, labelled solution **A** (see note 1)
- (ii) 10 cm<sup>3</sup> of 1% protein suspension labelled solution **B** (see note 1)
- (iii) 10 cm<sup>3</sup> of 5% glucose solution labelled solution **C** (see note 1)
- [MH] (iv) Benedict's solution labelled **Benedict's solution** with a dropper
- [C] (v) biuret solution labelled **biuret solution** with a dropper
- [MH][N] (vi) iodine solution labelled **iodine solution** with a dropper
- (vii) access to a hot water-bath of about 80 °C (see note 2)
- (viii) 9 test-tubes (approximately 125 × 15 mm) (see note 3)
- (ix) means of supporting the test-tubes
- (x) test-tube holder
- (xi) sight of a clock.

### Note 1

The solutions should be made within 24 hours of the examination.

### Note 2

If candidates are sharing a water-bath a means of labelling a test-tube needs to be provided. A water-bath can be provided for each candidate using a container larger than a test-tube and a supply of hot water at 80 °C.

### Note 3

Centres may provide fewer test-tubes, the minimum being three test-tubes. If this is the case, candidates will have to rinse test-tubes with distilled/deionised water so this must be provided.

### For Question 2

No apparatus is required for this question.

**For Question 3**

Each candidate will require:

- [F]
- (i) 50 cm<sup>3</sup> of hydrochloric acid, 2.0 mol dm<sup>-3</sup>, labelled **dilute hydrochloric acid**
  - (ii) 6 one cm pieces of magnesium ribbon labelled **magnesium ribbon**
  - (iii) 2 boiling tubes (large test-tubes) (approximately 150 mm × 25 mm) and a means to support them
  - (iv) thermometer –10 °C to +110 °C with 1 °C graduations (see note)
  - (v) 25 cm<sup>3</sup> measuring cylinder
  - (vi) dropping pipette
  - (vii) paper towel.

**Note**

The thermometer in (iv) will be used to stir a solution.

**For Question 4**

Each candidate will require:

- [MH]
- (i) 2 g of potassium bromide labelled **solid X**
  - (ii) access to nitric acid, 0.5 mol dm<sup>-3</sup>, labelled **dilute nitric acid**
  - (iii) access to aqueous silver nitrate, 0.05 mol dm<sup>-3</sup>, labelled **aqueous silver nitrate**
  - (iv) 1 boiling tube (approximately 150 mm × 25 mm) and a means to support it
  - (v) access to distilled/deionised water, each candidate will require approximately 20 cm<sup>3</sup>
  - (vi) stirring rod
  - (vii) 2 test-tubes (approximately 125 mm × 16 mm) and a means to support them
  - (viii) wooden splint
  - (ix) Bunsen burner and a means to light it.

**For Question 5**

No apparatus is required for this question.

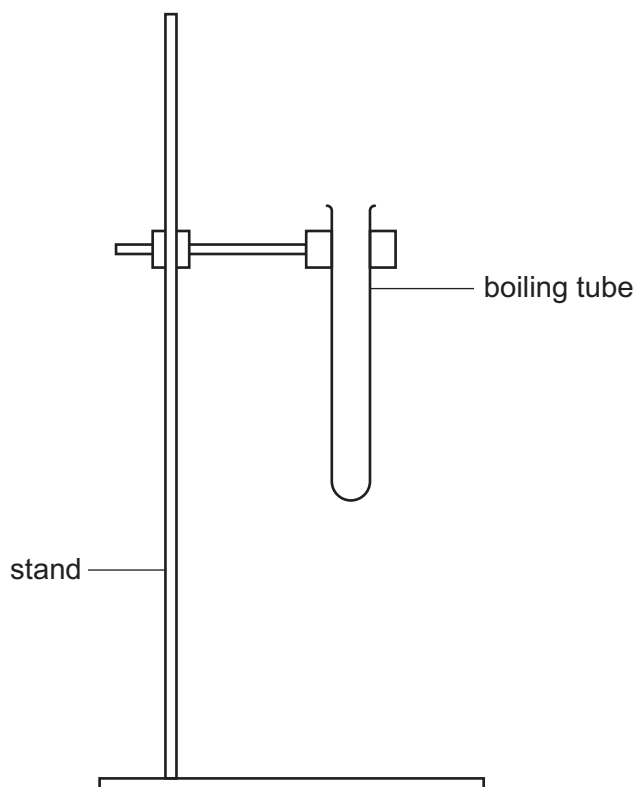
**For Question 6**

Each candidate will require:

- (i) 100 cm<sup>3</sup> measuring cylinder
- (ii) boiling tube (large test-tube) (approximately 150 mm × 25 mm)
- (iii) retort stand, boss and clamp (see note)
- (iv) 250 cm<sup>3</sup> beaker containing approximately 200 cm<sup>3</sup> cold water
- (v) 30 cm or 50 cm ruler graduated in millimetres.

**Note**

The boiling tube must be set up in the clamp as shown in Fig. 6.1.



**Fig. 6.1**

**Action at Changeover**

Empty the measuring cylinder and boiling tube. Re-fill the beaker with water.

### For Question 7

Each candidate will require:

- (i) a d.c. power supply of approximately 1.5V to 2V. 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
- (ii) a voltmeter capable of measuring up to 2.5V with minimum resolution of 0.1 V
- (iii) an ammeter capable of measuring up to 1.00A with a minimum resolution of 0.05A
- (iv) a switch. The switch may be an integral part of the power supply
- (v) a wooden or plastic metre rule
- (vi) approximately 100 cm of straight, bare constantan wire of diameter 0.27 mm (32 swg), taped to a metre rule at two places (between the zero and 5.0 cm mark and between the 95.0 cm and 100.0 cm mark). The zero end of the wire is to be labelled **X** and the other end **Y**. The left hand end of the wire must be taped over up to but **not** including the 10.0 cm mark to prevent candidates attaching the crocodile clip in this area
- (vii) a sliding contact, labelled **C**. This should be a crocodile clip attached to a lead.

### Note 1

The circuit shown in Fig. 7.1 must be set up for the candidates. The crocodile clip must **not** be connected to the resistance wire.

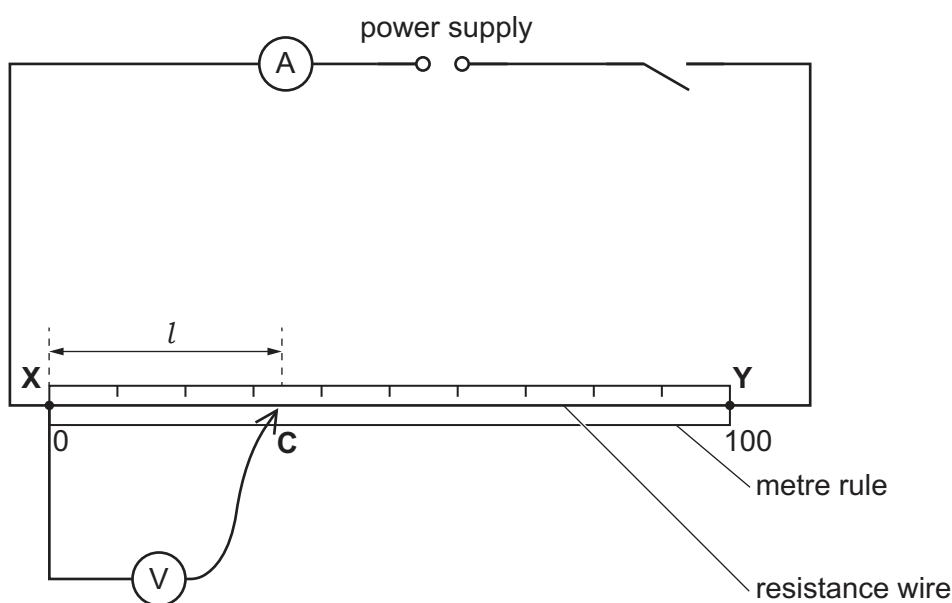


Fig. 7.1

### Note 2

If dry cells are used as the power source, check that they remain adequately charged during the examination. Spare cells should be available.

### Action at changeover

Check that the circuit is still connected correctly and working.

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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 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) .....