



# Cambridge IGCSE™

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**COMBINED SCIENCE**

**0653/52**

Paper 5 Practical Test

**February/March 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. Any 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:

<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, 2 and 4 and record the results on a spare copy of the question paper, clearly labelled 'supervisor's results'.

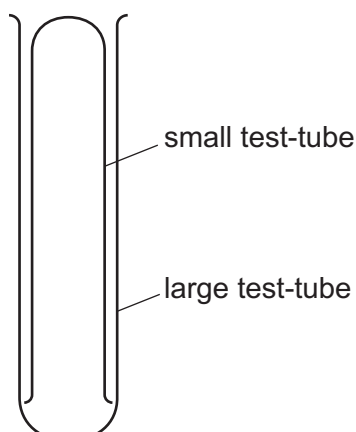
### Apparatus and chemicals for Question 1

Each candidate will require the following materials and apparatus.

- 100cm<sup>3</sup> of 10% yeast suspension in a beaker labelled **Y** (see note 1)
- 50cm<sup>3</sup> of boiled 10% yeast suspension in a beaker labelled **Z** (see note 2)
- 10cm<sup>3</sup> of 5% glucose solution labelled **5% glucose solution**
- 10cm<sup>3</sup> of distilled water in a small beaker labelled **distilled water**
- three test-tubes, approximately 125 mm x 16 mm and a means to support them
- three large test-tubes (boiling tubes), approximately 150 mm x 25 mm and a means to support them (see note 3)
- two 5 cm<sup>3</sup> syringes
- 250 cm<sup>3</sup> beaker labelled **water-bath**
- access to hot and cold water sufficient to maintain a temperature of 40°C in the water-bath
- thermometer, -10°C to 110°C with 1°C graduations
- glass (stirring) rod
- means of labelling test-tubes, e.g. permanent marker pen
- stop-clock
- a ruler for measuring the height of the liquid

### Notes

1. Yeast suspension **Y**.  
To make up a yeast suspension add 10g dried baker's yeast to 100cm<sup>3</sup> distilled water at approximately 35°C to 40°C. Mix well. This should be prepared shortly before the exam.
2. Boiled yeast suspension **Z**.  
To make the boiled yeast suspension, place a 10% yeast suspension in a beaker and bring to the boil. Stir well and cool to room temperature.
3. The small test-tube should be able to fit upside down inside the large test-tube as shown:



**Apparatus and chemicals for Question 2**

Each candidate will require the following materials and apparatus.

- two test-tubes (approximately 125 mm × 16 mm) and a means to support them
- 100 cm<sup>3</sup> glass or plastic beaker
- two dropping pipettes (see note 1)
- filter funnel
- filter paper
- glass (stirring) rod
- 100 or 250 cm<sup>3</sup> conical flask
- two 10 cm<sup>3</sup> measuring cylinders

**[C][N]**

- 20 cm<sup>3</sup> of 0.5 mol dm<sup>-3</sup> copper(II) sulfate labelled **aqueous copper(II) sulfate**
- 10 cm<sup>3</sup> of 0.5 mol dm<sup>-3</sup> barium nitrate labelled **aqueous barium nitrate**

**[MH][N]**

- 10 cm<sup>3</sup> of 1.0 mol dm<sup>-3</sup> ammonia labelled **aqueous ammonia**
- 5 cm<sup>3</sup> of 0.1 mol dm<sup>-3</sup> potassium iodide labelled **aqueous potassium iodide**
- 10 cm<sup>3</sup> of 1.0 mol dm<sup>-3</sup> sodium thiosulfate labelled **aqueous sodium thiosulfate**
- access to distilled water or deionised water
- paper towels

**Notes**

1. There should be a dropping pipette available for the aqueous ammonia and another dropping pipette for the aqueous sodium thiosulfate.

**Apparatus and chemicals for Question 3**

No apparatus or chemicals are required for this question.

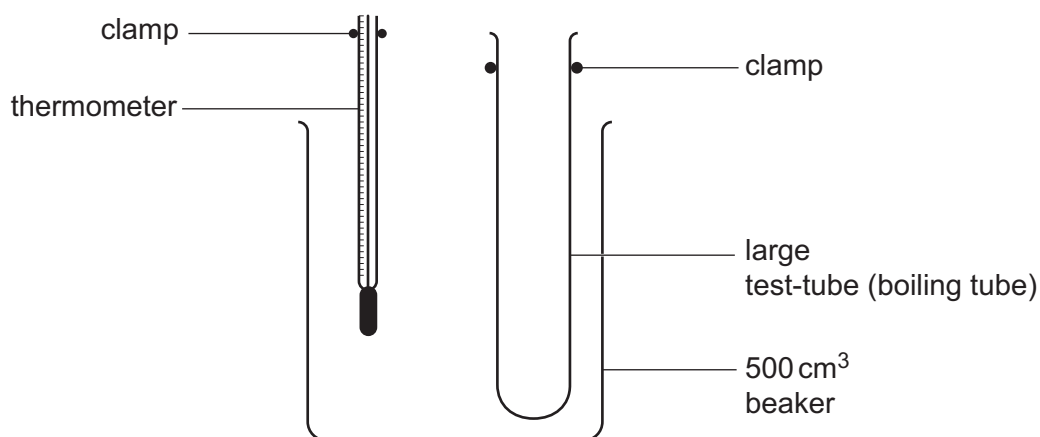
**Apparatus and chemicals for Question 4**

Each candidate will require the following materials and apparatus.

- large test-tube (boiling tube) approximately 150 mm × 25 mm
- 500 cm<sup>3</sup> beaker (see note 1)
- two retort stands, each with a clamp and boss (see note 1)
- two stirring thermometers, –10 to 110 °C with 1.0 °C graduations (see note 1)
- supply of hot water (see notes 2 and 3)
- approximately 300 cm<sup>3</sup> of water at room temperature
- stop-watch or sight of a clock which reads to the nearest whole second
- glass (stirring) rod

**Notes**

1. One thermometer should be fitted vertically in one of the clamps, ensuring that the scale is visible. The large test-tube should be clamped in the other clamp and placed in the beaker as shown in Fig. 4.1.



**Fig. 4.1**

2. Each candidate will require approximately 50 cm<sup>3</sup> of hot water. The hot water should be supplied and maintained at a temperature of approximately 80 °C.
3. Candidates should be warned of the dangers of burns or scalds when using very hot water.

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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) .....