



# Cambridge IGCSE™

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**CO-ORDINATED SCIENCES**

**0654/51**

Paper 5 Practical Test

**October/November 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, 2, 3 and 5 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) an insect pollinated flower, radially symmetrical with between 4 and 6 petals of approximately 4 to 10cm, large enough to see the petals, carpel and stamen easily (e.g. a lily or tulip)
- (ii) white tile
- (iii) 30 cm ruler graduated in mm

### For Question 2

Each candidate will require:

- (i) 3 × approximately 1 cm depth milk in a test-tube labelled **milk**
- (ii) 3 × approximately 1 cm depth honey in a test-tube labelled **honey**, see note 1
- (iii) Benedict's solution with dropper, labelled **Benedict's solution**
- [C] (iv) biuret solution with dropper labelled **biuret solution**
- [MH] (v) iodine solution with dropper labelled **iodine solution**
- (vi) access to a hot water-bath at a temperature of about 80 °C
- (vii) means of supporting the test-tubes
- (viii) test-tube holder
- (ix) means of labelling glassware
- (x) sight of a clock with a second hand

### Note 1

The honey should be watered down so it is very runny.

**For Question 3**

Each candidate will require

- (i) 10 g of salt (sodium chloride) labelled **salt**
- (ii) 25 cm<sup>3</sup> distilled water labelled **distilled water**
- (iii) boiling tube (approximately 150 mm × 25 mm)
- (iv) a few anti-bumping granules labelled anti-bumping granules
- (v) stirring thermometer, –10 °C to +110 °C with 1 °C graduations
- (vi) stand, boss and clamp
- (vii) Bunsen burner and a means to light it
- (viii) heatproof mat
- (ix) spatula
- (x) paper towels

**Note 1**

Candidates will need warning about wearing goggles and burns and scalds from boiling water and boiling salt solution.

**Note 2**

At changeover the boiling tube of water should be emptied.

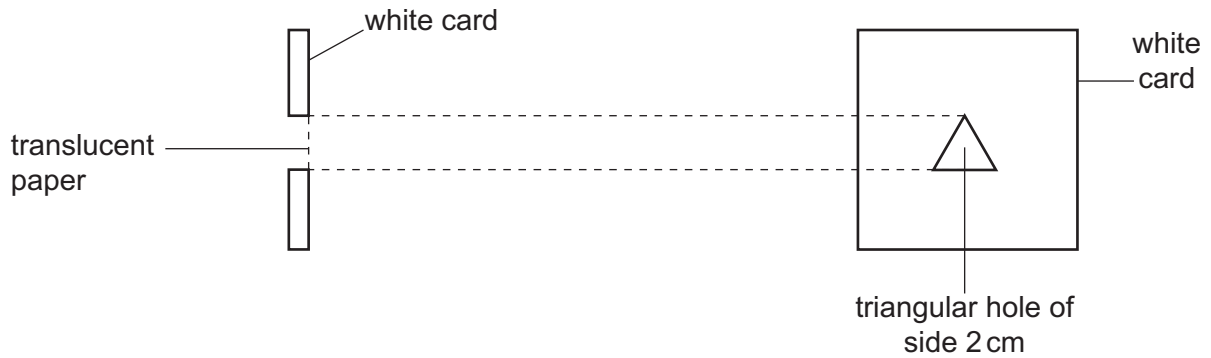
**For Question 4**

There is no apparatus needed for Question 4.

### Apparatus and materials for Question 5

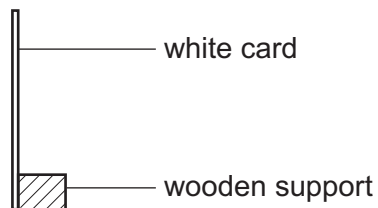
Each candidate will require

- (i) a convex lens with focal length  $f = 15$  cm, with holder
- (ii) a metre rule
- (iii) an illuminated object with a hole in the shape of an equilateral triangle of side approximately 2 cm (see Notes 1 and 2)



**Fig. 5.1**

- (iv) a white screen. The screen can be made from a sheet of white card (10 cm  $\times$  10 cm approx.). Some means of supporting the screen vertically must be supplied (e.g. fixing the white card to a small block of wood). (See Fig. 5.2 and Note 3).



**Fig. 5.2**

**Note 1**

The object can be made by cutting a triangular hole in a piece of white card, and covering the hole with translucent paper.

The orientation of the triangle must be as shown in Fig. 5.1.

**Note 2**

The illumination can be provided by a 12V, 24W lamp, or similar.

**Note 3**

The lamp filament, the centre of the hole in the object card and the centre of the lens should be arranged to be the same height above the bench.

**Action at changeover**

Switch off the lamp and return the apparatus to the starting position.

**For Question 6**

There is no apparatus needed for Question 6.

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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) .....