



**Cambridge International Examinations**  
Cambridge International General Certificate of Secondary Education

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**BIOLOGY**

**0610/51**

Paper 5 Practical Test

**October/November 2017**

CONFIDENTIAL INSTRUCTIONS

**Great care should be taken to ensure that any confidential information given does not reach the candidates either directly or indirectly.**



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If you have any queries regarding these Confidential Instructions, please contact Cambridge stating the Centre number, the nature of the query and the syllabus number quoted above.

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This document consists of 7 printed pages and 1 blank page.

**READ THESE INSTRUCTIONS FIRST**

These Confidential Instructions give details of the apparatus required by each candidate for each experiment in this paper. A summary of the questions that will be presented to the candidates is included, where appropriate, to allow the biology teacher to test the apparatus appropriately. **Testing must be done out of sight of all candidates.**

**No access to the question paper is permitted in advance of the examination.**

Centres are reminded that candidates are expected to follow the instructions on the question paper and record all their results. They will not be penalised if these results are not what they expect.

The Supervisor should make sure the Supervisor's Report is fully completed and a copy is enclosed with each packet of scripts.

It is assumed that the ordinary apparatus of a science laboratory will be available, including a supply of purified water (distilled or deionised).

If arrangements are made for different sessions for different groups of candidates, care must be taken to ensure that the different groups of candidates are effectively isolated so that **no information passes between them.**

**All specimens should carry only the code letters and numbers as indicated and their identity should not be revealed to the candidates.**

Supervisors should ensure that all specimens have the correct identity attached to the specimen and that these are **not** removed during the examination.

If a candidate breaks any of the apparatus, or loses any of the material supplied, the matter should be rectified and a note made in the Supervisor's Report.

Supervisors are advised to remind candidates that **all** substances in the examination should be treated with caution. Pipette fillers and eye protection should be used where necessary.

In accordance with COSHH (Control of Substances Hazardous to Health) Regulations, operative in the UK, a hazard appraisal of the examination has been carried out.

The following codes are used 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 |                           |

Centres are reminded that they are **not** permitted to open the question paper envelopes before the examination.

If there are any difficulties with any aspect of setting up this practical examination that the Centre is not able to resolve, it is essential for Centres to contact Cambridge as soon as possible by **email** to [info@cie.org.uk](mailto:info@cie.org.uk), by **fax** to +44 1223 553558 or by **phone** to +44 1223 553554.

**Question 1**

Each candidate should be provided with:

- (i) five Petri dishes with lids
- (ii) 20 cm<sup>3</sup> of distilled water in a container labelled **water**
- (iii) 20 cm<sup>3</sup> of 2% citric acid in a container labelled **B**
- (iv) 20 cm<sup>3</sup> of 2% ethanoic acid in a container labelled **C**
- (v) 20 cm<sup>3</sup> of 1% sodium chloride in a container labelled **D**
- (vi) 20 cm<sup>3</sup> of 1% sodium hydrogencarbonate in a container labelled **E**
- (vii) a marker pen suitable for marking glassware and plastic
- (viii) one apple, large enough to cut a minimum of six slices, each approximately 30 mm × 10 mm × 5 mm in size  
Do not use bruised or damaged apples.
- (ix) one white tile, large enough to place the apple slices on
- (x) 15 cm or 30 cm ruler with a mm scale
- (xi) knife or scalpel suitable for cutting and peeling the apple
- (xii) spatula for crushing the apple slices
- (xiii) container labelled **waste**
- (xiv) beaker labelled **waste liquid**
- (xv) five pieces of Universal Indicator paper 1–14 range, each piece a minimum of 15 mm in length, placed in a dish or on a piece of paper labelled **Universal Indicator paper**
- (xvi) one Universal Indicator chart with pH values, in a dish or on a piece of paper labelled **Universal Indicator chart**
- (xvii) paper towels
- (xviii) view of a clock or timer that allows the candidate to time minutes accurately

## Preparation of solutions

### HH 2% citric acid

Add 20 g of citric acid to 250 cm<sup>3</sup> of distilled water. Stir until the citric acid dissolves. Add more distilled water to make up to a final volume of 1 dm<sup>3</sup>.

The solution can be made two days before the examination and stored in a cool place.

### C, F 2% ethanoic acid

safety glasses and gloves should be used

Measure 20 cm<sup>3</sup> of glacial ethanoic acid and add it to 230 cm<sup>3</sup> of distilled water. Add the diluted ethanoic acid to 750 cm<sup>3</sup> of distilled water to make up to a final volume of 1 dm<sup>3</sup>. **Note: for safety reasons add the acid to the water.**

The solution can be made a week before the examination and stored in a cool place.

White vinegar can be used as an alternative to 2% ethanoic acid. Brown coloured vinegar is not suitable.

### 1% sodium chloride solution

Add 10 g of sodium chloride to 250 cm<sup>3</sup> of distilled water. Stir until the sodium chloride dissolves. Add more distilled water to make up to a final volume of 1 dm<sup>3</sup>.

The solution can be made a week before the examination and stored in a cool place.

### 1% sodium hydrogencarbonate solution

Add 10 g of sodium hydrogencarbonate to 250 cm<sup>3</sup> of distilled water. Stir until the sodium hydrogencarbonate dissolves. Add more distilled water to make up to a final volume of 1 dm<sup>3</sup>.

The solution should be made just before the examination.

Baking powder can be used as an alternative to solid sodium hydrogencarbonate.

Before the examination the Supervisor should carry out part of the investigation to test different varieties of apple. A 30 mm × 10 mm × 5 mm slice of peeled apple should be crushed on a tile and left uncovered. The crushed apple should start to turn brown within 10 minutes and should be obviously brown in colour within 20 minutes.

The rate at which crushed apple turns brown is very variable. In general, green skinned apples with firm flesh turn brown faster. Of the European varieties tested, Granny Smith, Golden Delicious and Bramley were suitable.

As apple varieties are named differently in different parts of the world, Centres must ensure that they test apples in sufficient time.

The Supervisor (**not** the invigilator) should carry out the practical aspects of Question 1 and record their results in the space in the Supervisor's Report. This must be done during the examination, using the same apparatus as the candidates but **out of sight** of the candidates.

**Question 2**

No laboratory equipment is required

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This form should be completed and sent to Cambridge with the scripts.

### SUPERVISOR'S REPORT

The Supervisor or Teacher responsible for the subject should provide the following information.

- 1 Was any difficulty experienced in providing the necessary materials? If so, give brief details.

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.....

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- 2 Give details of any difficulties experienced by particular candidates, giving names and candidate numbers. Reference should be made to:

- (a) difficulties with specimens or materials;

.....

- (b) accidents to apparatus or materials;

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- (c) assistance provided in the case of colour blindness;

.....

- (d) any other information that is likely to assist the Examiner, especially if this cannot be discovered from the scripts.

.....

Other cases of individual hardship, e.g. illness or disability, should be reported direct to Cambridge on the normal Special Consideration Form as detailed in the Handbook for Centres.

- 3 During the examination, the Supervisor should, **out of sight of the candidates**, carry out the practical aspects of **Question 1** using the same apparatus and reagents as the candidates. Results should be recorded in the space on page 8 (**not** on a spare question paper). Attach extra sheets if necessary.

The Invigilator should **not** carry out **Question 1**.

Question 1 results:

- 4 A plan of work benches, giving details of the candidate numbers of the places occupied by the candidates for each session, must be enclosed with the scripts.

**Declaration** (to be signed by the Supervisor)

The preparation of this practical has been carried out so as to maintain fully the security of the examination.

Signed .....

Name (IN BLOCK CAPITALS) .....

Centre number .....

Centre name .....

If scripts are required to be dispatched in more than one packet, it is essential that a copy of the Supervisor's Report and the appropriate seating plan(s) are inside **each packet**.