



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

**BIOLOGY**

**0610/52**

Paper 5 Practical Test

**October/November 2016**

CONFIDENTIAL INSTRUCTIONS

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



If you have any problems or queries regarding these Confidential Instructions, please contact Cambridge by email [info@cie.org.uk](mailto:info@cie.org.uk)  
by phone +44 1223 553554  
by fax +44 1223 553558  
stating the Centre number, the nature of the query and the syllabus number quoted above.

This document consists of **6** printed pages and **2** blank pages.

**READ THESE INSTRUCTIONS FIRST**

These 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 safety goggles 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 the Product Manager 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) pot containing three maize (corn) seedlings grown in the dark for approximately 10 days, labelled **D**
- (ii) pot containing three maize (corn) seedlings grown in the light for approximately 10 days, labelled **L**
- (iii) white tile
- (iv) spatula
- (v) glass marker pen
- (vi) scalpel or razor blade to cut the maize grain from the seedling root and shoot
- (vii) two test-tubes (125 mm × 15 mm) and a test-tube rack
- (viii) test-tube holder
- (ix) iodine solution in a dropping bottle (as normally used for food testing) labelled **iodine solution**
- (x) Benedict's solution in a dropping bottle (as normally used for food testing) labelled **Benedict's solution**
- (xi) 15 cm or 30 cm ruler marked in mm
- (xii) 20 cm<sup>3</sup> of distilled water in a small beaker labelled **water**
- (xiii) tap water in a beaker labelled **water for washing**
- (xiv) beaker to use as a water-bath for the Benedict's tests, labelled **water-bath**
- (xv) supply of hot water for the Benedict's tests, the temperature should be at least 80 °C  
Candidates have been asked to raise their hand when they need hot water.
- (xvi) beaker labelled **waste**
- (xvii) a syringe (without needle) for measuring 2 cm<sup>3</sup>
- (xviii) paper towels
- (xix) view of a clock or timer that allows the candidate to time minutes accurately
- (xx) safety glasses and gloves

**Question 2**

No additional materials are required

**Preparation of seedlings:**

Maize (corn) grains should be soaked in water for 24 hours before planting. Soaked grains should be planted in small pots containing soil. Plastic drinking glasses or yoghurt pots can be used. Garden soil or potting compost or vermiculite can be used. Extra sets of seedlings should be grown to allow for failures in germination and accidents by candidates.

3 grains per pot should be planted about 1 cm below the soil surface. Sufficient pots should be placed in a dark place and left to germinate. Another set of pots should be placed in a light place, but not a window ledge and left to germinate. Ideally the two sets of pots should be in the same room.

The time for seedlings to reach a sufficient size is temperature dependent and there is variation between varieties. Seedlings grown in the light should have 1–3 leaves starting to expand and be between 10–20 cm in height. Seedlings grown in the dark should have 1–2 leaves starting to expand and be between 15–30 cm in height.

At 20°C approximately 10 days is needed for commercial varieties intended for human consumption (sweet corn) to reach this size. Any variety of maize can be used, but supervisors should ensure that trials are carried out well before the examination to determine how many days are needed for the variety being used and the ambient temperature.



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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.

.....  
 .....  
 .....

- 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;

.....

**(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 parts of **Question 1** using the same apparatus and reagents as the candidates. Results should be recorded in the space on page **8** (**not** on the spare question paper).

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

Results for question **1(b)**:

Average length of seedling coleoptiles grown in the light .....

Average length of seedling coleoptiles grown in the dark .....

Results for question **1(c)(ii)**:

test	seedlings grown in the light	seedlings grown in the dark
Benedict's		
iodine		

- 4 A plan of work benches, giving details of the candidate numbers for the places occupied by the candidate 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**.