

**BIOLOGY**

**0610/52**

Paper 5 Practical Test

**May/June 2014**

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 CIE  
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.



## 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:

**C** = corrosive substance

**F** = highly flammable substance

**H** = harmful or irritating substance

**O** = oxidising substance

**T** = toxic substance

**N** = harmful to the 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 **e-mail** 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) one standard Petri dish containing 2% agar, made up with Universal Indicator, to a depth of approximately 10 mm

The Petri dish should be presented with the lid in place.

**Preparation of agar**

This should be prepared on the day before the examination. It is essential that the agar does not dry out once it has set. To prevent drying out, the Petri dishes should be wrapped in a plastic bag or similar and kept cool in a refrigerator.

All the Petri dishes should be checked for microorganisms before being given to candidates. Any with microorganisms should be discarded safely. In addition, a small excess of Petri dishes should be available should any candidate require a replacement due to accident. It is therefore recommended that Centres prepare more Petri dishes than the number of candidates.

20 g of plain agar powder should be placed in a pan (a saucepan with a volume of at least 2 dm<sup>3</sup> would be suitable). 20 cm<sup>3</sup> of Universal Indicator should be added and then the volume made up to 1 dm<sup>3</sup> with distilled or deionised water. This should be gently brought to the boil, stirring continuously and the heat turned off to prevent boiling over.

The mixture should be a yellow colour but the pH may need to be adjusted slightly to achieve this. The mixture should be allowed to cool to about 55°C and then poured into approximately 20 Petri dishes to a depth of 10 mm (Petri dish lids cannot be used as they are not deep enough). This depth can be marked on a wooden splint for easy reference to ensure an even 10 mm depth.

Keep the agar in cool conditions to set firmly. The Petri dishes should be kept horizontal so that the agar sets to a uniform depth. Lids should be placed on the Petri dishes as soon as they are cool.

- (ii) 5 large test-tubes to contain a maximum of 50 cm<sup>3</sup> of liquid, in a test-tube rack
- (iii) a measuring cylinder with graduations so that candidates can measure 5 cm<sup>3</sup> and 20 cm<sup>3</sup>
- (iv) at least 100 cm<sup>3</sup> of 1 mol dm<sup>-3</sup> sulfuric acid in a beaker, labelled **sulfuric acid**
- (v) ruler – with mm divisions
- (vi) knife / scalpel
- (vii) blunt forceps
- (viii) white tile
- (ix) stop clock, or sight of a clock able to measure minutes and seconds.
- (x) means to label containers (permanent/waterproof marker pen)
- (xi) paper towels

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

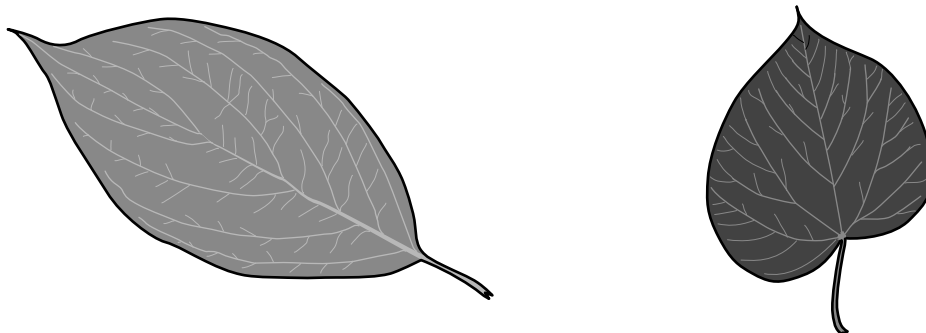
## Question 2

Each candidate should be provided with:

- (i) a leaf, which is not more than 10 cm from tip to base.

The leaf needs to be broad and flat, and should be a simple shape with smooth edges.

Examples of suitable leaves are shown in the photographs below.



The leaf should be presented standing in a small beaker of water so that it doesn't dry out.

The Supervisor (**not** the Invigilator) is expected to carry out the practical aspects of **Question 2** and record their result in the space provided in the Supervisor's Report. This must be done during the examination, using the same apparatus and reagents as the candidates but **out of sight of the candidates**.





This form should be completed and returned to CIE with the scripts.

### SUPERVISOR'S REPORT ON PRACTICAL BIOLOGY

*The Supervisor should provide the following information.*

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

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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 arising from faulty specimens or microscopes;

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(b) accidents to apparatus or materials;

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(c) assistance provided in 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 **Question 1** and **Question 2** using the same apparatus and reagents as the candidates. Results should be recorded in the space on page 6 (**not** on a spare question Paper). The Invigilator should **not** carry out **Question 1** or **Question 2**.



Please name the plant species used to supply the leaves and attach a photograph (or detailed line drawing).

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- 4 Enclose a plan of work benches with the scripts, giving details of the candidate numbers for the places occupied by the candidates for each session. Use separate paper for this.

**Declaration** (to be signed by the Principal or the Examinations Officer)

The preparation of this practical examination 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 by CIE to be despatched in more than one packet, it is essential that a copy of the relevant Supervisor's report and the appropriate seating plan(s) are sent inside **each packet**.

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