



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

**BIOLOGY**

**0610/05**

Paper 5 Practical Test

May/June 2006

**CONFIDENTIAL INSTRUCTIONS**

**1 hour**

**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 Instructions, please contact CIE  
by e-mail [International@cie.org.uk](mailto:International@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 **4** printed pages, **2** blank pages and **1** Supervisor's Report.

**READ THESE INSTRUCTIONS FIRST**

These instructions give details of the apparatus, reagents and specimens required by each candidate for each exercise and experiment in this paper. A summary of the questions that will be presented to candidates is included, where appropriate, to allow the teacher to test the apparatus. **No access to the question paper is permitted in advance of 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.

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.**

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

**Question 1**

Each candidate to be supplied with the following apparatus and materials:

- (i) a large test-tube
- (ii) clamp and stand
- (iii) thermometer
- (iv) measuring cylinder or other means of measuring  $20\text{ cm}^3$
- (v) heatproof mat
- (vi) cold water in a suitable container
- (vii) mounted needle or other means of spearing snack food  
A suitable alternative could be made up of a long pin with the pin head embedded in a cork
- (viii) a Bunsen burner
- (ix) locally available dried snack food, labelled **S1**

A suitable snack food should be chosen that can be readily impaled on a needle and will burn

A fairly high fat content is desirable

Suitable examples might include corn snacks, gram (besam) flour snack, crackers, pop corn

**Nuts should not be used**

The material should be tested beforehand and should be able to produce a rise in temperature of  $20\text{ cm}^3$  water of about  $30^\circ\text{C}$  on burning

Supervisors should ensure that there is a sufficient supply of **S1** to allow candidates to receive more, in case of being unable to attach the snack to the needle

- (x) paper towelling

**Question 2**

Each candidate to be supplied with the following apparatus and materials:

- (i) a broad bean seedling, or similar with hypogeal germination, that has germinated and then grown for at least 2 days in the light, labelled as **S2**
- (ii) a broad bean seedling, or similar with hypogeal germination, that has germinated and then grown for at least 2 days in the dark, labelled as **S3**

**S2** and **S3** should show shoot and root growth and the remains of the seed should also be supplied to the candidates in each case

There should be a difference in colour and stem length between **S2** and **S3** (**S3** should be paler in colour and have a longer stem than **S2**)

Candidates should be supplied with similar pairs of seedlings so that there is as little variation as possible in observable differences from candidate to candidate.

Supervisors should trial germination times in advance of the examination to ensure that seedlings at the correct stage of growth can be obtained, as germination and growth rates will vary in the different climates. Supervisors are also advised that some species, under certain conditions, do not germinate in a typically hypogeal manner. Germination should therefore also be checked to ensure that the cotyledons remain below ground

Suitable alternatives to broad bean (*Vicia faba*) might include pea (*Pisum sativum*), runner bean (*Phaseolus coccineus*), cultivated lentil / adar / messer / masser (*Lens culinaris*), river lily / veld lily (*Crinum sp*) or railroad vine (*Ipomoea pes-caprae*).

- (iii) hand lens





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

**REPORT ON PRACTICAL BIOLOGY**

**IGCSE**

**May/June Session 2006**

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

**1** Please identify **S1**.

.....

**2** Please identify **S2**.

.....

**3** Please give the stem length and colour of typical examples of seedlings **S2** and **S3**.

**S2** stem length ..... colour .....

**S3** stem length ..... colour .....

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

**4** 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;

**(b)** accidents to apparatus or materials;

**(c)** 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 CIE on the normal 'Special Consideration Form' as detailed in Part 6 of the Handbook for Centres.

- 5 A plan of work benches, giving details of the candidate numbers of the places occupied by candidates for each session, must be enclosed with the scripts. The space below can be used for this, or it may be on separate paper.

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

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 envelope, it is essential that a copy of the relevant Supervisor's report and the appropriate seating plan(s) are inside **each envelope**.