



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

---

**BIOLOGY**

**0610/05**

Paper 5 Practical Test

**October/November 2008**

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 email    [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 **6** printed pages and **2** blank pages.



**READ THESE INSTRUCTIONS FIRST**

These instructions give details of the apparatus, reagents and specimens required by each candidate for each 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.**

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

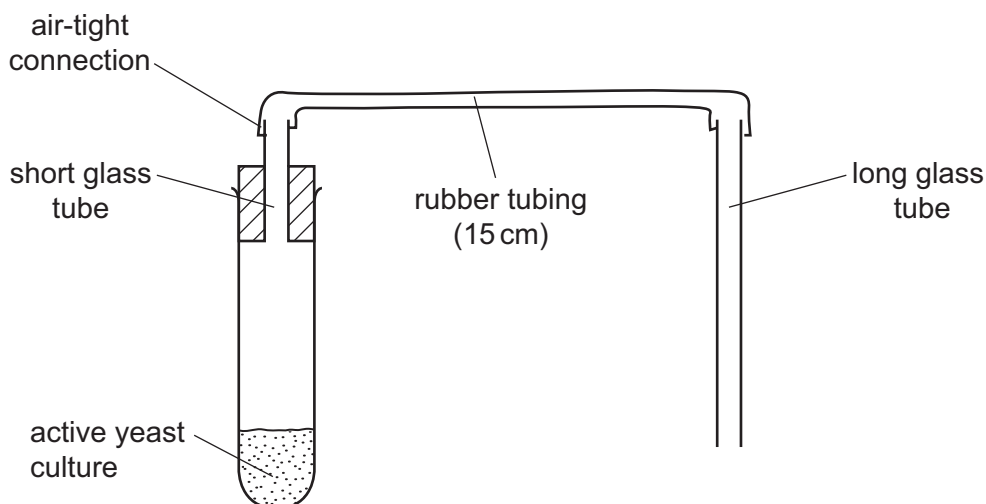
**O** = oxidising substance

**T** = toxic substance

## Question 1

Each candidate will need:

- (i) Large test-tube quarter filled with an active yeast culture fitted with a bung and a delivery tube, labelled '**active yeast culture**'. The delivery tube should be made from two straight glass tubes joined by a short length of rubber tubing (approximately 15 cm) to give air-tight connections with the glass tubes.



### Preparation of active yeast culture:

The yeast culture needs to be prepared 1 to 2 hours before the examination.

A 5 % sucrose solution should be prepared by dissolving the sucrose in warm water (25-30 °C).

Dried yeast (3g/100 cm<sup>3</sup>) is added to the sucrose solution and gently stirred to produce an active and frothy suspension.

Concentrations may need to be adjusted to produce an active yeast culture.

**Warning** The active yeast culture should **not** be so active and frothy so that it flows through the rubber tubing and down the delivery tube.

- (ii) Test-tube half filled with hydrogencarbonate indicator.  
This can be obtained from a laboratory supplier, in a concentrated form or prepared as follows:

### Preparation of hydrogencarbonate indicator solution:

Dissolve 0.2 g thymol blue and 0.1g cresol red powders in 20 cm<sup>3</sup> ethanol or I.M.S.

Dissolve 0.84 g sodium hydrogen carbonate (sodium bicarbonate) in 200 cm<sup>3</sup> distilled water.

Add the alcoholic solution to the hydrogencarbonate solution and make up to 1 dm<sup>3</sup> with distilled water.

**It is important that the distilled water is freshly made.**

**The day before the examination**, dilute this mixture 10 times with distilled water and bring into equilibrium with the atmospheric air by bubbling air through the diluted mixture with a pump until **the solution turns red**.

**Ensure that the indicator is red in colour when given to the candidates at the start of the examination.**

**Candidates have been advised to attract your attention if their indicator is not red in colour.**

- (iii) a support for the test-tubes such as a test-tube rack or two beakers.
- (iv) stop clock or view of a clock.
- (v) paper towel.

## Question 2

*Each candidate will need:*

- (i) **one** de-shelled hen's egg in a beaker\*, filled with distilled water, labelled **W1**.
- (ii) **another** hen's egg in a second beaker\* filled with an **equal volume** (as in **W1**) of salt solution (50 g sodium chloride (salt)  $\text{dm}^{-3}$ ), labelled **W2**.  
There should be sufficient liquid in the containers so that the egg in **W2**, in the salt solution, can float clear of the bottom of the container.

\* an alternative transparent container may be used.

To **de-shell eggs**, place eggs in dilute hydrochloric acid (so the eggs are fully submerged) for a few hours. Rinse well under running water to remove the acid.

**THESE EGGS NEED TO BE PREPARED 2 DAYS IN ADVANCE OF THE EXAMINATION AND STORED IN A REFRIGERATOR OR COLD ROOM (MAX 5°C) IN THEIR RESPECTIVE SOLUTIONS.**

**After 2 days the eggs that have been in water should be larger and more turgid than the eggs in the salt solution.**

- (iii) paper towel.
- (iv) glass rod.
- (v) 2 test-tubes, labelled **C** and **D**.

**C** contains  $2 \text{ cm}^3$  of a dilute solution of egg white (dried albumen  $1.0 \text{ g dm}^{-3}$ );

**D** contains  $2 \text{ cm}^3$  of a more concentrated solution of egg white (dried albumen  $3.0 \text{ g dm}^{-3}$ ).

These solutions of egg white can be mixed with distilled water to distribute the solute, but do not beat to make frothy. There **must** be a difference in concentration of the protein in tubes **C** and **D** so there is a difference in biuret colouration.

- (vi) Reagents to carry out protein food tests.

Approximately  $5 \text{ cm}^3$  of each reagent will need to be provided in separate tubes with appropriate labels (Biuret solutions to be labelled '**biuret 1**' and '**biuret 2**') and safety signs.

**BLANK PAGE**

**BLANK PAGE**

---

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

University of Cambridge International Examinations is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.

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

**REPORT ON PRACTICAL BIOLOGY**

**IGCSE**

**October/November Session 2008**

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

- 1 Was any difficulty experienced in providing necessary material? 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) any other information that is likely to assist the Examiner, especially if this cannot be discovered from the scripts.

**Information that applies to all candidates need only be given once.**

Other cases of individual hardship, eg. 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.



- 3 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. 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 this examination.

Signed .....

Name (in block capitals) .....

Centre number .....

Centre name .....

If scripts are required by CIE to be dispatched 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**.

