



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education
Advanced Subsidiary Level and Advanced Level

BIOLOGY

9700/31

Paper 31 Advanced Practical Skills

October/November 2007

CONFIDENTIAL INSTRUCTIONS

2 hours

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,
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.



Instructions for preparing apparatus

These instructions give details of the apparatus required by each candidate for each exercise and 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. **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.

Candidates must be provided with a microscope with:

- Low-power objective lens, e.g. $\times 10$ (equal to 16 mm or $\frac{2}{3}$ ")
- High-power objective lens, e.g. $\times 40$ (equal to 4 mm or $\frac{1}{6}$ ")
- Eyepiece graticule fitted within the eyepiece and visible in focus at the same time as the specimen

Each candidate must have sole, uninterrupted, use of the microscope for at least 55 minutes.

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 the 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 environment

Centres are reminded that they are **not** permitted to open the question paper envelopes before the examination. Centres are also referred to the Handbook for Centres, and in particular Section 3.1.2 (c) (i), Security of Question Papers and Examination Materials, as well as 3.3.11.1, Practical Examinations in Science Subjects.

If there are any difficulties with any aspect of setting up this practical examination that the Centre is not able to sort out, it is essential for Centres to contact the Product Manager, Dr Rick Nelms, as soon as possible by e-mail to international@cie.org.uk, by fax to +44 1223 553558 or by phone to +44 1223 553554.

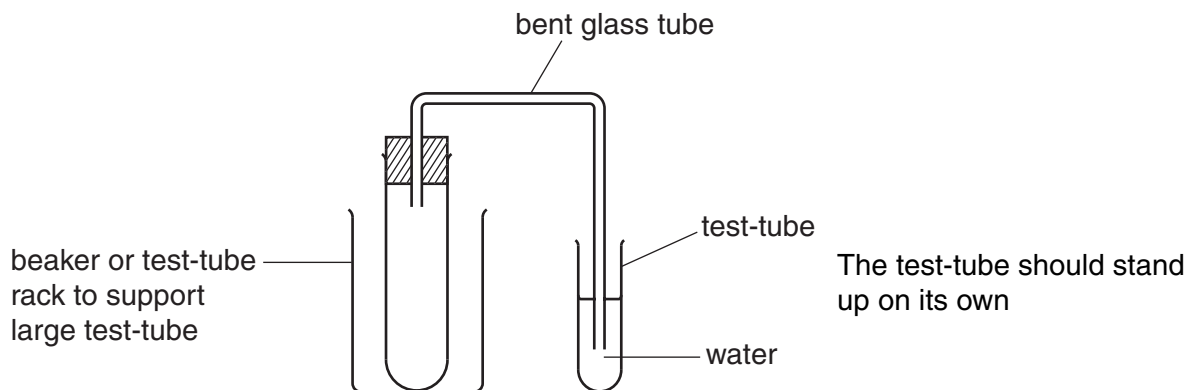
Confidential Instructions

Each candidate must be supplied with the following apparatus and materials.

Question 1

Each candidate will require:

- (i) 40 cm³ distilled water, labelled **beaker 1**.
- [H] (ii) 20 cm³ of 20 vol hydrogen peroxide solution, labelled **beaker 2**. Pour out hydrogen peroxide solution just before use.
- (iii) Safety glasses or other eye protection (recommended).
- (iv) 10 cm³ of potato extract in a small beaker, labelled **C**. This should be prepared by chopping up large fresh potatoes with their skins removed and blending them in a blender. The resulting mixture should then be filtered to produce a liquid. This can be done by placing the blended mixture into muslin or coarse cloth and squeezing out the liquid into a beaker. If fresh potatoes are not available then use sweet potato. This may be prepared the day before the examination but should be stored in a refrigerator overnight.
- (v) Two small beakers or similar containers.
- (vi) Access to tap water.
- (vii) Three syringes to measure between 1 cm³ and 10 cm³ (or one syringe and a means of washing it).
- (viii) The candidates should be provided with the following apparatus assembled as shown in the diagram. The small test-tube should stand up on its own.



This apparatus requires:

large and smaller test-tube,
delivery tube attached to bung that will fit the test-tube to give an airtight fit,
large beaker or similar or test-tube rack.

- (ix) Stop-clock with second hand or stop-watch or sight of a clock or watch with a second hand.
- (x) Access to petroleum jelly.

The Supervisor or teacher responsible for the subject should carry out **1(a)(i)** during the examination, out of sight of the candidates, and report the results on the supervisor's report on page 7 of these Confidential Instructions.

Question 2

Each candidate will require:

- (i) A slide labelled **J1**, supplied by Cambridge.
- (ii) A stage micrometer scale, supplied by Cambridge, attached to a microscope slide with self-adhesive transparent tape, as described in the instructions supplied with the scale. These should be retained by Centres after the examination.
- (iii) A microscope with:
 - Low-power objective lens, e.g. $\times 10$ (equal to 16 mm or $\frac{2}{3}$ ")
 - High-power objective lens, e.g. $\times 40$ (equal to 4 mm or $\frac{1}{6}$ ")
 - Eyepiece graticule (from Cambridge) fitted within the eyepiece and visible in focus at the same time as the specimen. The plastic graticules supplied by Cambridge should be retained by the Centre after the examination. Centres may use their own eyepiece graticules.

MATERIALS TO BE SUPPLIED BY CIE

- (i) Question papers.
- (ii) Slide **J1** (question 2, shared between two candidates).
- (iii) Two graticule scales and instructions for their use, one as an eyepiece graticule, the other as a stage micrometer.

RETURN OF EXAMINATION MATERIALS TO CAMBRIDGE

Immediately after the examination, microscope slides **must** be returned to CIE in the containers in which they were received, using the self-adhesive label for the parcel. They must **not** be included in the parcel of scripts. It may be possible to buy the slides, in which case an order form will be enclosed with the slides, and should be returned to CIE using the self-adhesive label for the letter. Slides and containers not returned in good condition will be charged at a rate of £4 per item to which may be added administrative costs.

REPORT FORM

The teacher responsible for the examination is asked to fill in the Report Form on pages 7 and 8 of these Confidential Instructions. For Centres where more than one script envelope is used, there must be a copy of the complete Report Form in each script parcel.

These report forms are vital in order to allow the examiners to assess all candidates as fairly as possible and should always be completed by every Centre.

A copy of the seating plan for the examination room must also be enclosed in each script parcel.

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- 3 Enclose a plan of work benches with the scripts, giving details of the candidate numbers of the places occupied by the candidates for each session. 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 the 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 sent inside **each envelope**.

