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

BIOLOGY **9700/31**

Paper 31 Advanced Practical Skills **May/June 2009**

CONFIDENTIAL INSTRUCTIONS

Great care should be taken to ensure that any confidential information given, including the identity of material on microscope slides where appropriate, does not reach the candidates either directly or indirectly.

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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 **7** printed pages and **1** blank page.

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International Examinations

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Instructions for preparing apparatus

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. **No access to the question paper is permitted in advance of the examination.**

Centres are reminded that candidates are expected to follow the instructions given in the question paper and record all their results. They will not be penalised if these results are **not** as expected. The Supervisor should make sure that the Supervisor report is fully completed and a copy enclosed with each packet of scripts.

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. × 10 (equal to 16 mm or $\frac{2}{3}''$)
- High-power objective lens, e.g. × 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 resolve, 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.

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Confidential Instructions

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

Question 1

Each candidate will require:

Materials:

[H] [F] **(i)** At least 50 cm^3 industrial methylated spirits (ethanol) in a beaker covered with cling film or aluminium foil and labelled **E**.

There should be no naked flames in the room (or rooms) where the practical test is carried out.

(ii) At least 100 cm^3 20% glucose solution. This is prepared by adding 20 g of glucose to 50 cm^3 warm distilled water, stirring and then making up to 100 cm^3. The glucose solution should be provided to candidates in beakers, labelled **G**. It should be provided at a temperature between 45 °C and 50 °C as they start the question.

(iii) At least 100 cm^3 distilled water in a beaker, labelled **W**.

(iv) Five large, dry, boiling tubes, labelled **1** to **5**,
each containing 0.7 g dried yeast (+/– 0.1 g).

Fresh E, G, W and large tubes with yeast must be provided for each candidate.

(v) At least 25 small pieces of Universal Indicator paper (pH 1 to pH 11), each approximately 1 cm long, provided in a stoppered container, labelled **Universal Indicator paper**. Universal Indicator paper provided by CIE with colour charts.

Apparatus:

(i) Forceps.

(ii) Clean white tile.

(iii) Pipette.

(iv) Glass rod.

(v) Paper towel.

(vi) Three 10 cm^3 syringes.

(vii) Container with tap water, labelled **for washing**.

(viii) Container, labelled **waste**.

(ix) Stop clock, stop watch, or sight of a clock with second hand.

(x) One 400 cm^3 or 600 cm^3 beaker, or other suitable container, to act as a water bath to contain five large tubes. Candidates need to be given or have access to warm water between 45 °C and 50 °C. They do not need to maintain this temperature. They may **not** use a thermostatically controlled water bath except to collect water at the start.

(xi) Test-tube rack or beaker to hold large tubes.

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(xii) Glass marker pen.

(xiii) Safety goggles/glasses.

(xiv) Petri dish or container, labelled **paper waste**.

The Supervisor should, out of sight of the candidates, carry out Q1(a)(i) and Q1(a)(iii) and record the results on the Supervisor's report which should be sent with the scripts.

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Question 2

Each candidate will require:

(i) Slide **J1** (Cambridge).

(ii) Microscope with:

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

On receipt of the slides, please check that they are the correct ones, i.e. **J1**, and that all slides are intact. The identity of material on the slides is **confidential** and must **not** be disclosed to candidates.

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

REPORT ON PRACTICAL BIOLOGY

A Level

May/June Session 2009

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 arising from faulty specimens or microscopes;

(b) accidents to apparatus or materials;

(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.

All 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.

3. Results for question **1(a)(i)**.

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4. Results for question **1(a)(iii)**.

5. 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 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 sent inside **each envelope**.

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UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education
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BIOLOGY **9700/32**

Paper 32 Advanced Practical Skills **May/June 2009**

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Instructions for preparing apparatus

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Confidential Instructions

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

Question 1

Each candidate will require:

Materials:

(i) At least 100 cm^3 of a 7.0% yeast suspension. This is to be prepared about 15 mins. before the examination as follows:

7.0 g of dried yeast (**for baking**) is added to 80 cm^3 of warm distilled water, stirred and made up to 100 cm^3. This should be kept at a temperature between 35 °C and 40 °C. Add 20 g of glucose by **sprinkling over the surface** of the yeast suspension as you stir the suspension. Warm for 15 minutes. As the mixture will froth, it should be kept in a large container. 100 cm^3 of the suspension should be given to each candidate in a beaker which will enable the yeast to froth e.g. 250 cm^3 and labelled **Y**.

The glucose should be added to the yeast 10 to 15 minutes before the candidates start Question 1. Each candidate should have fresh yeast suspension.

It is essential to try the yeast well before the examination to make sure that it will become active. (Do not use Brewer's yeast as this does not always work actively enough in the time).

(ii) At least 50 cm^3 10% sodium chloride solution in a beaker, labelled **S**. This is prepared by adding 10 g of sodium chloride to 50 cm^3 distilled water, stirring well and then making up to 100 cm^3.

(iii) At least 100 cm^3 distilled water in a beaker, labelled **W**.

Fresh Y, S, and W must be provided for each candidate.

Apparatus:

(i) Five small beakers/containers.

(ii) Glass rod.

(iii) One 10 cm^3 syringe (fully airtight).

(iv) One plastic pipette per candidate provided by Cambridge.

(v) Ruler.

(vi) Scissors, or sharp blade and tile.

(vii) Stop clock, stop watch or sight of a clock with second hand.

(viii) One large tube (boiling).

(ix) Test-tube rack suitable for large tubes.

(x) Glass marker pen.

(xi) Safety goggles/glasses.

(xii) Container with tap water labelled **for washing**.

The Supervisor should, out of sight of the candidates, carry out Q1(a)(i) and (ii) and record the results on the Supervisor's report which should be sent with the scripts.

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Question 2

Each candidate will require:

(i) Slide **K1** (Cambridge).

(ii) Microscope with:

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

On receipt of the slides, please check that they are the correct ones, i.e. **K1**, and that all slides are intact. The identity of material on the slides is **confidential** and must **not** be disclosed to candidates.

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3. Results for question **1(a)(i)** and **(ii)**.

4. 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 on a separate piece of paper.

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