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UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Advanced Level

BIOLOGY **9700/05**

Paper 5 Practical Test A2

October/November 2006

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 Instructions, please contact CIE
by e-mail: International@ucles.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 **5** printed pages, **1** blank page and a Report Form.

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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 session.**

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 40 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 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

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Confidential Instructions

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

To be supplied by the Centre

Question 1

Each candidate will require

(i) Benedict's solution in a suitable small dispensing bottle, labelled as **Benedict's solution**.

[C] [H] (ii) Solution(s) to carry out biuret test – these should be the solutions that candidates are used to using for carrying out biuret test. For example candidates could be provided with two suitable small dispensing bottles, one containing 5% potassium hydroxide solution, labelled **5% potassium hydroxide solution for use in biuret test**, the other containing 1% copper sulphate solution labelled **1% copper sulphate solution for use in biuret test**.

(iii) About 10 cm^3 of 1% starch suspension in a container labelled **S5**. This may be prepared by adding 1 g of starch to about 5 cm^3 of distilled (or deionised) water and mixing to a uniform paste. This is added to 90 cm^3 of boiling distilled water. Stir well to obtain a uniform suspension. Make up to 100 cm^3 with distilled water and cool before use. This suspension may be stored overnight in a refrigerator. The starch should be tested well before the examination to ensure that it contains no reducing sugar.

(iv) 10 cm^3 of each of the following solutions:

[H]

S1 2% amylase solution presented at room temperature (between 20 and 40 °C) and labelled **S1**. This should be prepared by dissolving 2 g of amylase powder in 90 cm^3 of distilled water and making up to 100 cm^3. It may be stored overnight in a refrigerator. This solution should give a purple colour with biuret test and a blue or green colour with Benedict's test. The amylase will be supplied by CIE.

S2 1% glucose solution labelled **S2** and prepared by dissolving 1 g of glucose powder in 90 cm^3 of distilled water and making up to 100 cm^3. This solution should give a blue colour with biuret test and a red or orange colour with Benedict's test.

S3 1% protein suspension labelled **S3**. This could be made by dissolving 10 cm^3 of egg white in 80 cm^3 of distilled water and making up to 100 cm^3. Alternatively, it could be made by dissolving 1 g of dried albumin in 90 cm^3 of distilled water and making up to 100 cm^3. This solution should give a purple colour with biuret test and a blue colour with Benedict's test.

S4 Distilled water labelled **S4**. This should give a blue colour with biuret test and a blue colour with Benedict's test.

(v) Four test tubes in a rack, with a means of washing the test tubes.

(vi) Syringe to measure volumes of 1 cm^3 to 5 cm^3 (or graduated pipette and pipette filler).

(vii) Access to a waterbath for heating test-tubes. This could consist of a Bunsen burner, tripod, gauze and 250 cm^3 or similar beaker or heatproof container, half full of hot water, with thermometer that can read up to at least 100 °C. Alternatively, a small number of candidates might share an electrically heated waterbath set to at least 80 °C, provided that the candidates can be properly supervised and can move to the waterbath without disturbing each other. Please ensure that the type of waterbath used by the students is recorded on the supervisor's report.

(viii) Plain white tile.

(ix) Dropping pipette.

(x) A means of putting waterproof markings on glass such as a wax pencil, permanent transparency pen or 10–15 small sticky labels.

(xi) A stopclock or stopwatch or sight of a clock with a second hand.

Question 2

Each candidate will require

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

(ii) 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.

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MATERIALS TO BE SUPPLIED BY CAMBRIDGE

Question papers

Amylase (question 1)

Slide **K1** (question 2 and shared between two candidates)

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 £3 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 every script packet.

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 envelope.

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

REPORT ON PRACTICAL BIOLOGY

A Level

October/November Session 2006

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 overleaf 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.

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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 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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