



Cambridge International Examinations
Cambridge Pre-U Certificate

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BIOLOGY (PRINCIPAL)

9790/04

Paper 4 Practical

For Examination from 2016

SPECIMEN CONFIDENTIAL INSTRUCTIONS

2 hours 30 minutes

Great care should be taken to ensure that any confidential information given does not reach the candidates either directly or indirectly.

The syllabus is approved for use in England, Wales and Northern Ireland as a Cambridge International Level 3 Pre-U Certificate.

This document consists of **5** printed pages and **1** blank page.

Instructions for preparing apparatus

These instructions give details of the apparatus and materials required by each candidate for this paper. Sufficient information is given to permit the Centre to set up and test the apparatus and materials so that the candidates can be fairly assessed. **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 on 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 $2/3$ ")
- high-power objective lens, e.g. $\times 40$ (equal to 4 mm or $1/6$ ")
- eyepiece graticule fitted within the eyepiece and visible in focus at the same time as the specimen.

Each candidate should have sole, uninterrupted, use of the microscope for at least 35 minutes.

HEALTH AND SAFETY

Supervisors are advised to remind candidates that **all** substances in the examination should be treated with caution. Only those tests described in the Question Paper should be attempted. Pipette fillers and safety goggles should be used when 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.

Attention is drawn in particular to certain materials used in the examination. The following codes are used where relevant.

C = corrosive substance

H = harmful or irritating substance

T = toxic substance

F = highly flammable substance

O = oxidising substance

N = dangerous to the environment

The attention of Supervisors is drawn to any local regulations relating to safety, first-aid and disposal of chemicals.

'Hazard Data Sheets', relating to materials used in this examination, should be available from your chemical supplier.

Instructions to Supervisors

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

To be supplied by the Centre.

Question 1

Each candidate will require, for a period of 90 minutes:

- (i) 100 cm³ of full fat milk in a beaker labelled **milk**.
- (ii) 50 cm³ of sodium carbonate solution in a beaker labelled **sodium carbonate solution**. This must be prepared as follows:

Add 95 cm³ distilled or de-ionised water to 0.3g of anhydrous sodium carbonate, stir to dissolve and then add distilled or de-ionised water to make up to 100 cm³.

- [F] (iii) 10 cm³ of thymolphthalein solution in a beaker or dropping bottle labelled **thymolphthalein**. This solution is flammable.

- (iv) 20 cm³ of 1% lipase solution in a beaker labelled **lipase solution**. This must be prepared as follows:

Dissolve 1g of lipase in 50 cm³ of cold distilled or de-ionised water and stir thoroughly. Make up to 100 cm³ with more water.

The solution must be prepared just before the examination.

- (v) 20 cm³ of 5% bile salts (sodium tauroglycocholate) solution in a beaker labelled **5% bile salts solution**. This must be prepared as follows:

Add 95 cm³ distilled or de-ionised water to 5.0g sodium tauroglycocholate, stir to dissolve and then add distilled or de-ionised water to make up to 100 cm³.

- (vi) 50 cm³ of distilled or deionised water provided in a beaker labelled **water**.

- (vii) Twelve test-tubes (e.g. 12 × 1.4 cm); test-tube rack or racks; one bung to fit all test-tubes; test-tube holders; one dropping pipette; glass rod; permanent marker pen or other suitable way to label glassware.

- (viii) Five small beakers, e.g. 50 cm³ or 100 cm³ for candidates to prepare their bile salts solutions.

- (ix) Stopwatch, stop clock or bench timer.

- (x) 2 × 10 cm³ syringes; 2 × 2 cm³ syringes and 2 × 1 cm³ syringes.

- (xi) One 600 cm³ beaker to act as a water-bath; thermometer. Candidates must **not** use thermostatically-controlled water-baths, but they should have access to one to collect water at 55–60 °C.

- (xii) A beaker of water labelled **washing water**.

- (xiii) Beaker for waste water labelled **waste**.

(xiv) Paper towels.

Centres are advised to have stocks of the milk, lipase solution, sodium carbonate solution and bile salts solution available for candidates.

Extra supplies of test-tubes and other glassware should also be available should candidates require them.

Sodium tauroglycocholate may be obtained from science education suppliers.

Question 2

Each candidate must have sole, uninterrupted use of a microscope fitted with an eyepiece graticule for at least 35 minutes, as described on page 2.

Each candidate will require, for a period of 60 minutes:

(i) Hand lens, e.g. $\times 10$.

(ii) Slides **R1** and **R2**.

R1 is a transverse section of the spinal cord of a small mammal. **R2** is a transverse section of a small mammal cerebellum. Suitable prepared slides may be obtained from science education suppliers.

(iii) Plastic ruler (mm / cm).

(iv) Stage micrometer.

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