



Cambridge Pre-U

BIOLOGY

9790/04

Paper 4 Practical

For examination from 2020

SPECIMEN CONFIDENTIAL INSTRUCTIONS



This document gives details of how to prepare for and administer the practical exam.

The information in this document and the identity of any materials supplied by Cambridge International are confidential and must NOT reach candidates either directly or indirectly.

The supervisor must complete the report at the end of this document and return it with the scripts.

INSTRUCTIONS

- If you have any queries regarding these confidential instructions, contact Cambridge International stating the centre number, the syllabus and component number and the nature of the query.
email info@cambridgeinternational.org
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This specimen paper has been updated for assessments from 2020. The specimen questions and mark schemes remain the same. The layout and wording of the front covers have been updated to reflect the new Cambridge International branding and to make instructions clearer for candidates.

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

This document has **8** pages. Blank pages are indicated.

General information about practical exams

Centres must follow the guidance on science practical exams given in the *Cambridge Handbook*.

Safety

Supervisors must follow national and local regulations relating to safety and first aid.

Only those procedures described in the question paper should be attempted.

Supervisors must inform candidates that materials and apparatus used in the exam should be treated with caution. Suitable eye protection should be used where necessary.

The following hazard codes are used in these confidential instructions, where relevant:

C	corrosive	MH	moderate hazard
HH	health hazard	T	acutely toxic
F	flammable	O	oxidising
N	hazardous to the aquatic environment		

Hazard data sheets relating to substances used in this exam should be available from your chemical supplier.

Before the exam

- The packets containing the question papers must **not** be opened before the exam.
- It is assumed that standard school laboratory facilities, as indicated in the *Guide to Planning Practical Science*, will be available.
- Spare materials and apparatus for the tasks set must be available for candidates, if required.

During the exam

- It must be made clear to candidates at the start of the exam that they may request spare materials and apparatus for the tasks set.
- Where specified, the supervisor **must** perform the experiments and record the results as instructed. This must be done **out of sight** of the candidates, using the same materials and apparatus as the candidates.
- Any assistance provided to candidates must be recorded in the supervisor's report.
- If any materials or apparatus need to be replaced, for example, in the event of breakage or loss, this must be recorded in the supervisor's report.

After the exam

- The supervisor must complete a report for each practical session held and each laboratory used.
- Each packet of scripts returned to Cambridge International must contain the following items:
 - the scripts of the candidates specified on the bar code label provided
 - the supervisor's results relevant to these candidates
 - the supervisor's reports relevant to these candidates
 - seating plans for each practical session, referring to each candidate by candidate number
 - the attendance register.

Specific information for this practical exam

During the exam, the supervisor or other competent biologist (**not** the invigilator) should obtain the results needed for the supervisor's report by following the relevant steps in the question paper. The results should be recorded in the supervisor's report.

Extra supplies of all of the apparatus and materials listed below should be available if candidates request them. No other apparatus or materials should be provided.

To be supplied by the centre.

Candidates must have access to 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. Microscopes are required for Question 2.

Question 1

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

- (i) 100 cm^3 of full fat milk in a beaker, labelled **milk**
- (ii) 50 cm^3 of sodium carbonate solution in a beaker, labelled **sodium carbonate solution**

This must be prepared as follows:

Add 95 cm^3 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 cm^3 .

- [F][MH] (iii) 10 cm^3 of thymolphthalein solution in a beaker or dropping bottle, labelled **thymolphthalein**
[HH]

This solution is flammable.

- [HH] (iv) 20 cm^3 of 1% lipase solution in a beaker, labelled **lipase solution**

This must be prepared as follows:

Dissolve 1 g of lipase in 50 cm^3 of cold distilled or de-ionised water and stir thoroughly. Make up to 100 cm^3 with more water.

The solution must be prepared just before the examination.

- (v) 20 cm^3 of 5% bile salts (sodium tauroglycocholate) solution in a beaker, labelled **5% bile salts solution**

This must be prepared as follows:

Add 95 cm^3 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 cm^3 .

- (vi) 50 cm³ of distilled or de-ionised 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
- (ix) stop clock or timer
- (x) two 10 cm³ syringes; two 2 cm³ syringes and two 1 cm³ syringes
- (xi) one 600 cm³ beaker to act as a water-bath; thermometer (−10 °C to 110 °C)

Candidates must **not** use thermostatically-controlled water-baths, but they should have access to one to collect water at 55–60 °C.

- (xii) beaker of water, labelled **washing water**
- (xiii) empty beaker, 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 will require, for a period of 60 minutes:

- (i) access to a microscope as described on page 3
- (ii) hand lens (at least $\times 6$)
- (iii) 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.

- (iv) plastic ruler (mm and cm)
- (v) stage micrometer

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Supervisor's report

Syllabus and component number

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Centre number

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Centre name

Time of the practical session

Laboratory name/number

Give details of any difficulties experienced by the centre or by candidates (include the relevant candidate names and candidate numbers).

You must include:

- any difficulties experienced by the centre in the preparation of materials
- any difficulties experienced by candidates, e.g. due to faulty materials or apparatus
- any specific assistance given to candidates.

Space for supervisor to record results.

Temperature of exam room °C

Results for Question **1(a)**, **1(c)(ii)** and **1(d)**. Affix additional sheets if necessary.

Declaration

- 1 Each packet that I am returning to Cambridge International contains the following items:
 - the scripts of the candidates specified on the bar code label provided
 - the supervisor's results relevant to these candidates
 - the supervisor's reports relevant to these candidates
 - seating plans for each practical session, referring to each candidate by candidate number
 - the attendance register
- 2 Where the practical exam has taken place in more than one practical session, I have clearly labelled the supervisor's results, supervisor's reports and seating plans with the time and laboratory name/number for each practical session.
- 3 I have included details of difficulties relating to each practical session experienced by the centre or by candidates.
- 4 I have reported any other adverse circumstances affecting candidates, e.g. illness, bereavement or temporary injury, directly to Cambridge International on a *special consideration form*.

Signed (supervisor)

Name (in block capitals)