



Cambridge Pre-U

BIOLOGY

9790/04

Paper 4 Practical

October/November 2020

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
phone +44 1223 553554

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 materials and apparatus listed below should be available if candidates request them. No other materials or apparatus 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 75 minutes. Microscopes are required for part of Question 2.

Question 1

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

- (i) 100 cm³ of fresh whole cows' milk, labelled **milk**
The material must be provided at room temperature.

- [MH][HH][C]** (ii) 40 cm³ of 10% chymosin solution in a beaker, labelled **10% chymosin solution**

The solution should be prepared by diluting chymosin with distilled water.

Chymosin for the examination must be purchased from the National Centre for Biotechnology Education (NCBE).

National Centre for Biotechnology Education, University of Reading
2 Earley Gate, Whiteknights, READING RG6 6AU

Tel: 0118 9873743

NCBE@reading.ac.uk www.ncbe.reading.ac.uk

- (iii) approximately 10 cm³ of 1.0 mol dm⁻³ solution of hydrochloric acid in a suitable container, labelled **hydrochloric acid**
- (iv) 10 strips of universal indicator paper (full range) and colour chart

- (v) 250 cm³ beaker containing at least 200 cm³ distilled water, labelled **distilled water**
- (vi) 250 cm³ beaker containing at least 200 cm³ distilled water, labelled **washing water**
- (vii) empty beaker, labelled **waste**
- (viii) three 1 cm³ syringes, two 5 cm³ syringes, two 10 cm³ syringes
- (ix) 400 cm³ beaker
- (x) 20 test-tubes (15 mm × 150 mm)
- (xi) 2 test-tube racks to contain at least 10 test-tubes each
- (xii) at least 5 small beakers, e.g. 50 cm³
- (xiii) glass rod
- (xiv) Bunsen burner, means of lighting and access to gas
- (xv) tripod
- (xvi) gauze
- (xvii) heat-proof mat
- (xviii) white tile
- (xix) water-resistant marker pen
- (xx) paper towels
- (xxi) thermometer (−10 °C to 110 °C)
- (xxii) suitable eye protection
- (xxiii) stop-clock or timer
- (xxiv) 5 bungs to fit test-tubes
- (xxv) black card (approximately 10 cm × 10 cm)
- (xxvi) 5 teat pipettes
- (xxvii) access to a supply of water, e.g. laboratory tap

Question 2

- (i) access to a microscope, as described on page 3
- (ii) stage micrometer

To be supplied by Cambridge International**Question 2**

- (i) slide F1

The number of slides supplied will be equal to half of the candidate entry.

Return of slides to Cambridge International

Immediately after the exam, the slides must be:

- returned to Cambridge International in the boxes in which they were received, using the self-adhesive label supplied. The slides must **not** be included in the packet of scripts.

OR

- purchased using the order form enclosed with the slides, which should be completed and returned to Cambridge International. The order form must **not** be included in the packet of scripts. Slides and boxes will be charged at the rate of £3 per slide plus £1 per box.

If the slides are not returned or purchased by the deadline stated on the order form, the charge will be £3.50 per slide plus £1 per box.

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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.

Temperature of exam room°C

Results for Question 1(a), (b), (d), (i)

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)