



Cambridge International AS & A Level

BIOLOGY

9700/35

Paper 3 Advanced Practical Skills 1

May/June 2022

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 document has **8** pages.

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.

Organisation of the exam

- All candidates must have access to the materials required for Question 1 throughout the whole period of the exam.
- Half of the candidates will have access to the microscope and slide for a maximum time of one hour from the start of the examination. These candidates should start with Question 2. After one hour, or sooner if candidates have finished Question 2, they should move on to Question 1.
- For Question 2, two candidates are not permitted to share the same microscope and slide at the same time.
- The other candidates should start with Question 1. After one hour, these candidates should be given access to the microscope and slide. They should then move on to Question 2 as soon as they are ready.
- Candidates will only have access to the microscope and slide for one hour. They should be advised that they can answer any part of the examination paper not requiring the microscope and slide throughout the whole period of the examination.
- Access arrangements to microscopes and slides, including instructions on which question to start with and timings, must be explained to candidates before the start of the examination.

Materials to be supplied by Cambridge International

- Slide **N1**
- Invertase enzyme

On receipt of the slides, check that they are labelled **N1** and that no slides are broken. The slides must **not** be viewed in advance of the exam. The material on the slides is confidential and must **not** be disclosed to candidates.

The number of slides supplied by Cambridge International will be equal to half 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 £3.25 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 £3.75 per slide plus £1 per box.

Materials and apparatus for Question 1

Each candidate will need:

| materials and apparatus for each candidate | quantity | ✓ |
|---|------------------------------|---|
| 1.0% invertase solution in a small beaker, labelled E , provided at room temperature (see Preparation of materials) | at least 20 cm ³ | |
| 60 mmol dm ⁻³ glucose solution in a small beaker, labelled R , provided at room temperature (see Preparation of materials) | at least 50 cm ³ | |
| 30 mmol dm ⁻³ sucrose solution in a small beaker, labelled S , provided at room temperature (see Preparation of materials) | at least 50 cm ³ | |
| Distilled water, in a beaker or container, labelled W , provided at room temperature | at least 200 cm ³ | |
| Benedict's solution in a small beaker, labelled B , provided at room temperature | at least 50 cm ³ | |
| 10 cm ³ syringes | 2 | |
| 5 cm ³ syringes | 3 | |
| 1 cm ³ syringes | 2 | |
| Beakers, capacity 50–100 cm ³ | 8 | |
| Test-tubes, small, capacity 20–30 cm ³ | 9 | |
| Test-tube racks to hold small test-tubes | 2 | |
| Test-tube holder to hold hot test-tubes | 1 | |
| Beaker, capacity approximately 400 cm ³ , with water at 40–50 °C, suitable for heating as a water-bath, labelled water-bath . The supervisor may use a thermostatically controlled water-bath to provide this hot water to candidates. | 1 | |
| Bunsen burner, tripod, gauze, bench mat and lighter or matches | 1 | |
| Container with approximately 200 cm ³ distilled water, labelled For washing | 1 | |
| Container, capacity approximately 300 cm ³ , labelled For waste | 1 | |
| Thermometer, –10 °C to +110 °C | 1 | |
| Glass rod | 1 | |
| Paper towels | 10 | |
| Marker pen (permanent) | 1 | |
| Stop-clock or timer showing seconds | 1 | |
| Suitable eye protection | 1 | |

Preparation of materials

Invertase solution, **E**, must be prepared on the day of the exam.

- [MH]**
- **E**, 1.0% invertase solution

This is prepared by adding 1 cm³ invertase solution (supplied by Cambridge International) to 99 cm³ distilled water and mixing well.

- **R**, 60 mmol dm⁻³ glucose solution

This is prepared by dissolving 1.1 g glucose in 80 cm³ distilled water and making up to 100 cm³ with distilled water.

- **S**, 30 mmol dm⁻³ sucrose solution

This is prepared by dissolving 1.0 g sucrose in 80 cm³ distilled water and making up to 100 cm³ with distilled water.

Materials and apparatus for Question 2

Each candidate will need:

| materials and apparatus for each candidate | quantity | ✓ |
|--|-------------|---|
| Microscope with: <ul style="list-style-type: none"> ● an eyepiece lens, $\times 10$ magnification ● a low-power objective lens, $\times 10$ magnification ● a high-power objective lens, $\times 40$ magnification | 1 between 2 | |
| Slide N1 | 1 between 2 | |

Preparation of materials

- Microscope

Any lenses which are **not** $\times 10$ or $\times 40$ should be removed or replaced.

For each candidate:

- the microscope must be set up on low power
- the slide must **not** be on the stage of the microscope.

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Supervisor's report

Syllabus and component number

| | | | | | | |
|---|---|---|---|---|---|---|
| 9 | 7 | 0 | 0 | / | 3 | 5 |
|---|---|---|---|---|---|---|

Centre number

| | | | | |
|--|--|--|--|--|
| | | | | |
|--|--|--|--|--|

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)

Table 1.3

| reducing sugar concentration / mmol dm ⁻³ | colour after 2 minutes |
|--|------------------------|
| 60 | |
| 30 | |
| 6 | |
| 0.6 | |

Results for Question 1(b)(iii)

Declaration

- Each packet that I am returning to Cambridge International contains all of 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.
- 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.
- I have included details of difficulties relating to each practical session experienced by the centre or by candidates.
- 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)