



BIOLOGY

5090/31

Paper 3 Practical Test

October/November 2019

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.

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.

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This document consists of **6** printed pages and **2** blank 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 (NOT the invigilator) must do the experiments in Questions 1 and 2 and record the results on a spare copy of the question paper, clearly labelled 'supervisor's results'.

Apparatus and chemicals for Question 1

Each candidate will require the following materials and apparatus.

Question 1

- (i) Two pieces of healthy green *Elodea canadensis* (or similar aquatic plant) supplied immersed in water in a beaker or similar container. The pieces should be as similar as possible and 5–6 cm long. They should have been kept in well-lit conditions favourable to photosynthesis beforehand.
- (ii) 5 test-tubes
- (iii) 2 bungs to fit test-tubes
- (iv) glass rod
- (v) wax pencil or similar means of labelling glassware
- (vi) measuring cylinder for accurately measuring up to 10 cm³
- (vii) two test-tube racks or beakers to hold test-tubes
- (viii) 100 cm³ of hydrogencarbonate indicator in a beaker labelled **hydrogencarbonate indicator**. The hydrogencarbonate indicator must be red. This can be achieved by bubbling atmospheric air through it beforehand to equilibrate it with atmospheric CO₂.
- (ix) approximately 5 cm³ of 0.1M HCl [**MH**] in a suitable container (labelled **dilute HCl**) with dropper
- (x) approximately 5 cm³ of 0.1M NaOH [**MH**] in a suitable container (labelled **dilute NaOH**) with dropper
- (xi) piece of aluminium foil 18 cm × 12 cm
- (xii) sight of a clock with second-hand
- (xiii) paper towels.

Candidates will need to place material in a well-lit position. Bench lamps can be used to provide extra light if the laboratory is not well-lit.

Apparatus for Question 2

Each candidate will require the following materials and apparatus.

- (i) Four or five radish (or similar, such as white mustard) seedlings in a Petri dish on a background of black paper. The seeds should be germinated on the black paper in the Petri dish and kept **damp** (not wet) and in the dark. A lid on the Petri dish will help to keep the seedlings moist. The developing roots should be approximately 15–25 mm long and clearly showing root hairs. This will take several days depending on temperature.
- (ii) ruler (mm)
- (iii) hand lens (preferably $\times 10$ magnification).

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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.

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 that practical session.
- 3 I have included details of difficulties relating to this 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)