

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:

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|-----------|--------------------------------------|-----------|-----------------|
| 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, 2, 3, 4 and 5 and record the results on a spare copy of the question paper, clearly labelled 'supervisor's results'.

For Question 1

Each candidate will require:

- (i) an insect-pollinated flower, radially symmetrical with between 4 and 6 petals of approximately 4 to 10 cm, large enough to see the petals, carpel and stamen easily (e.g. a lily or tulip)
- (ii) white tile
- (iii) 30 cm ruler graduated in mm.

For Question 2

Each candidate will require:

- [MH] [N]
- (i) 10 cm³ of 1% protein suspension labelled **pollen** (see note 1)
 - (ii) 10 cm³ of 5% glucose solution labelled **nectar** (see note 1)
 - (iii) Benedict's solution with dropper labelled **Benedict's solution**
 - (iv) biuret solution with dropper labelled **biuret solution**
 - (v) iodine solution with dropper labelled **iodine solution**
 - (vi) access to a hot water-bath of about 80 °C
 - (vii) six test-tubes (125 mm × 15 mm) (see note 2)
 - (viii) means of supporting test-tubes
 - (ix) test-tube holder.

Note 1

The protein suspension and glucose solution should be made within 24 hours of the examination.

Note 2

Centres may provide fewer test-tubes, the minimum being three test-tubes. If this is the case, candidates will have to rinse test-tubes with distilled water, so this must be provided.

For Question 3

Each candidate will require:

- [C] [MH] [N] (i) 10 cm³ of approximately 0.5 mol dm⁻³ zinc sulfate solution labelled **J**
(ii) 10 cm³ of approximately 0.5 mol dm⁻³ copper(II) chloride solution labelled **K**
[C] (iii) 10 cm³ of approximately 0.5 mol dm⁻³ sodium hydroxide solution labelled **L**
[MH] [N] (iv) 10 cm³ of approximately 1.0 mol dm⁻³ ammonia solution labelled **M**
low hazard (v) 10 cm³ of approximately 0.5 mol dm⁻³ barium nitrate solution labelled **N**
(vi) four test-tubes (125 mm × 15 mm)
(vii) means of supporting test-tubes
(viii) access to distilled or deionised water.
(ix) three dropping pipettes

For Question 4

Each candidate will require:

- (i) approximately 100 cm³ of 1.0 mol dm⁻³ hydrochloric acid labelled **dilute hydrochloric acid**
[C] (ii) approximately 75 cm³ of 1.0 mol dm⁻³ sodium hydroxide solution labelled **aqueous sodium hydroxide**
(iii) 100 cm³ glass beaker
(iv) 10 cm³ measuring cylinder
(v) 25 cm³ measuring cylinder
(vi) two dropping pipettes
(vii) stirring thermometer –10 °C to + 110 °C with 1 °C graduations
(viii) access to distilled or deionised water
(ix) paper towels.

For Question 5

Each candidate will require:

- (i) metre rule with a millimetre scale
- (ii) pivot – a prism or triangular wooden block placed on the bench (the question will refer to a pivot)
- (iii) 30 cm or 50 cm ruler with a millimetre scale
- (iv) 200 g load labelled **m** – this can be made from a combination of slotted masses taped together.

Notes

It is assumed that all candidates will use similar rules, unless stated otherwise in the supervisor's report.

The approximate mass of a rule should be determined by the Supervisor and recorded in the supervisor's report.

For Question 6

No apparatus is required for this question.

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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 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)