



## 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:

|           |                                      |           |                 |
|-----------|--------------------------------------|-----------|-----------------|
| <b>C</b>  | corrosive                            | <b>MH</b> | moderate hazard |
| <b>HH</b> | health hazard                        | <b>T</b>  | acutely toxic   |
| <b>F</b>  | flammable                            | <b>O</b>  | oxidising       |
| <b>N</b>  | 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 and 3 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:

- (i) 75 cm<sup>3</sup> hydrochloric acid 0.25 mol dm<sup>-3</sup> labelled **H**
- (ii) 75 cm<sup>3</sup> hydrochloric acid 0.1 mol dm<sup>-3</sup> labelled **J**
- [F] (iii) 2 × 6.0 cm lengths of magnesium ribbon labelled **magnesium ribbon**
- (iv) 50 cm<sup>3</sup> measuring cylinder
- (v) 1 stop-clock or stop-watch
- (vi) 100 cm<sup>3</sup> measuring cylinder. See Note 1
- (vii) 1 conical flask. See Note 1
- (viii) 1 delivery tube and bung to fit conical flask. See Note 1
- (ix) large beaker or tub. See Note 1
- (x) access to water. See Note 1
- (xi) clamp stand, boss and clamp. See Note 1.

### Notes

1. Each candidate will need to set up the apparatus shown in Fig. 1.1 using (vi), (vii), (viii), (ix) and (xi).

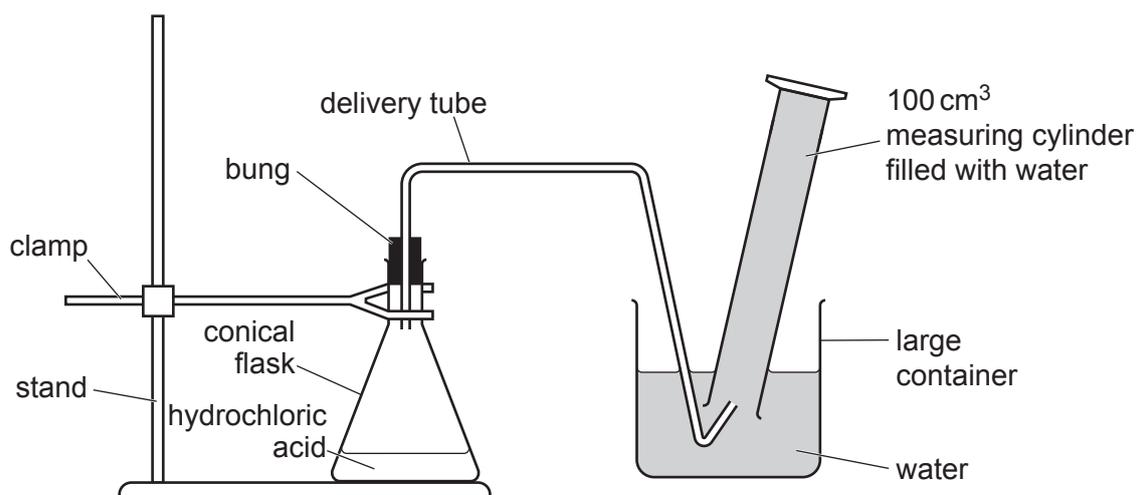


Fig. 1.1

### Action at changeover

Dismantle the apparatus and rinse the conical flask. Empty the large container.

**Apparatus for Question 2**

Each candidate will require:

- (i) 1 steel spring.

An expendable steel spring is suitable, for example a 55 mm long spring of diameter 15 mm (see [www.philipharris.co.uk](http://www.philipharris.co.uk), catalogue number B8G87194).

The spring must be capable of supporting at least 500 g without overstretching

- (ii) 1 clamp, stand and boss  
(iii) 1 30 cm or 1 50 cm rule, graduated in millimetres  
(iv) 300 g of masses.

A 100 g mass hanger with two 100 g slotted masses is ideal.

If a mass hanger is not available, a suitable light hook must be provided so that the masses can be suspended from the spring

- (v) 1 stop-clock or stop-watch.

**Action at changeover**

Remove spring and mass from clamp, stand and boss.

Replace spring if it has been permanently stretched.

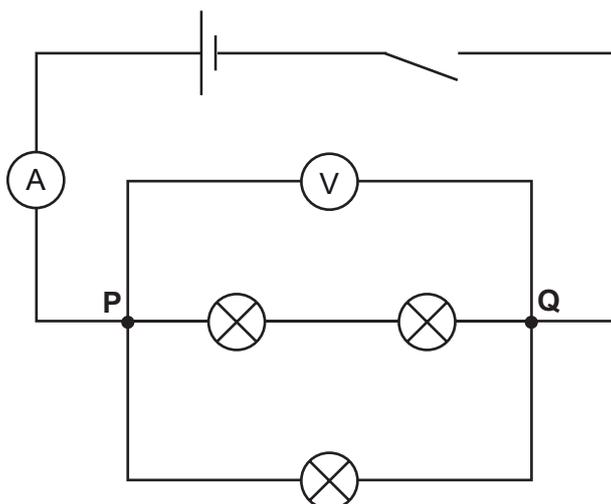
### Apparatus for Question 3

Each candidate will require:

- (i) a power source of approximately 2V. Where candidates are supplied with a variable power source, the voltage should be set by the supervisor and fixed, e.g. taped
- (ii) 3 filament lamps 2.5V, 0.3A (e.g. see [www.philipharris.co.uk](http://www.philipharris.co.uk) item B8A56728) or similar in suitable holders
- (iii) a switch – this may be an integral part of the power source
- (iv) sufficient connecting leads to set up the circuit shown in Fig. 3.1
- (v) ammeter capable of measuring currents up to 1.00A with a minimum resolution of 0.05A
- (vi) voltmeter capable of measuring up to 3.0V with a minimum resolution of 0.1V.

### Notes

1. The circuit is to be set up for candidates as shown in Fig. 3.1. Points **P** and **Q** must be labelled.



**Fig. 3.1**

2. If dry cells are used as the power source, they must remain adequately charged throughout the examination.
3. Spare lamps and leads should be available.
4. Candidates will be required to rearrange and reconnect the given circuit unaided **without disconnecting the voltmeter**. If help is required, it may be given, but the candidate number must be noted on the supervisor's report.

### Action at changeover

Reconnect the circuit shown in Fig. 3.1.

**Apparatus for Question 4**

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) .....