
CO-ORDINATED SCIENCES

0654/52

Paper 5 Practical Test

May/June 2017

CONFIDENTIAL INSTRUCTIONS

Great care should be taken to ensure that any confidential information given does not reach the candidates either directly or indirectly.

The Supervisor's attention is drawn to the form on page 8 which must be completed and returned with the scripts.

If you have any queries regarding these Confidential Instructions, please contact Cambridge stating the Centre number, the nature of the query and the syllabus number quoted above.

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This document consists of 7 printed pages and 1 blank page.

READ THESE INSTRUCTIONS FIRST

These Confidential Instructions detail the apparatus, reagents and specimens required by each candidate for each experiment in this paper.

The Supervisor is **not** allowed to consult the Question Paper before the examination. This teacher should, as part of the preparation of the examination requirements, test the apparatus in order to ensure that it is satisfactory.

All specimens should carry only the code letters and numbers as indicated and their identity should not be revealed to the candidates.

More material may be issued if required, without penalty, but this should not be necessary. If a candidate breaks any of the apparatus the matter should be rectified and a note made in the Supervisor's Report.

It is assumed that the ordinary apparatus of a science laboratory will be available, including a supply of purified water (distilled or deionised).

Supervisors are advised to remind candidates that **all** substances in the examination should be treated with caution. Only those tests described in the Question Paper should be attempted. Suitable eye protection should be provided.

In accordance with COSHH (Control of Substances Hazardous to Health) Regulations, operative in the UK, a hazard appraisal of the examination has been carried out.

Attention is drawn, in particular, to certain materials used in the examination. The following codes are used where relevant.

C corrosive substance

MH moderate hazard

HH health hazard

T acutely toxic

F flammable

O oxidising

N hazardous to the aquatic environment

Hazard data sheets should be available from your suppliers.

If arrangements are made for different sessions for different groups of candidates, care must be taken to ensure that the different groups of candidates are effectively isolated so that **no information passes between them**.

The Supervisor should make sure the Supervisor's Report is fully completed and a copy is enclosed with **each** packet of scripts.

Question 1

Each candidate will require:

- (i) an insect pollinated flower, radially symmetrical with between four and six petals of size 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) hand lens
- (iv) 30 cm ruler graduated in mm.

Question 2

Each candidate will require:

- (i) approximately 150cm^3 1.0mol dm^{-3} hydrochloric acid labelled **hydrochloric acid**
- (ii) four lots of 10 marble chips (2–4mm) each labelled **ten marble chips**
- (iii) clamp and stand
- (iv) 25cm^3 measuring cylinder
- (v) 100cm^3 measuring cylinder for use as in Fig. 2.1 (see note 1)
- (vi) 1 large test-tube (150mm × 25mm)
- (vii) beaker to support large test-tube in (vi)
- (viii) delivery tube with a bung to fit large test-tube in (vi) with 50cm of flexible tubing finishing in a small glass or rigid plastic U-tube (see Fig. 2.1)
- (ix) a container (e.g. a plastic bowl or plastic box) for the water, three quarters filled with water and large enough to allow candidates to place the 100cm^3 measuring cylinder full of water and inverted below the surface (see note 2)
- (x) stopclock
- (xi) large beaker for hot water
- (xii) source of hot water at about 80°C
- (xiii) thermometer, -10 to $+110$ graduated in 1°C
- (xiv) large beaker labelled **waste**.

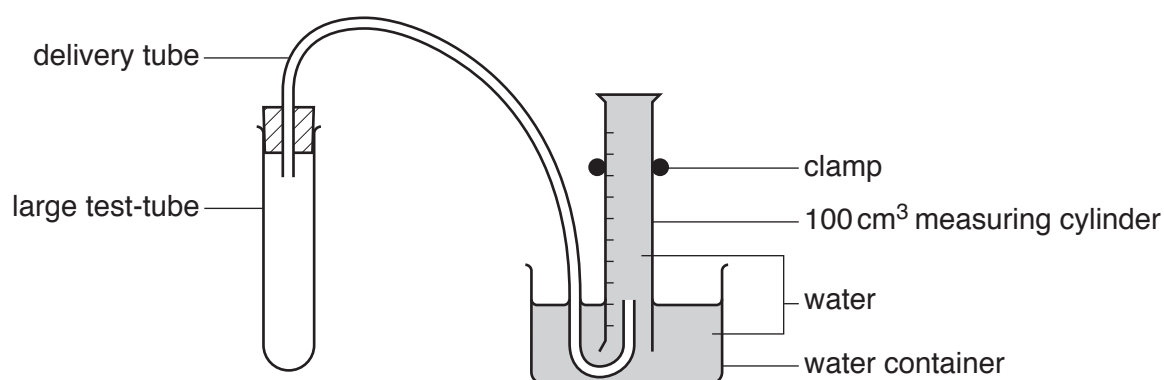


Fig. 2.1

Notes

1. It does not matter if the 100cm^3 measuring cylinder does not have a scale for the first few cm^3 .
2. The apparatus should **not** be assembled for the candidate.

Question 3

Each candidate will require:

- (i) 100 cm³ measuring cylinder. This should be dry
- (ii) a dry test-tube (approximately 15 mm in diameter and 125 mm in length), the mass of the test-tube should be **no** more than 25 g. The test-tube should be able to float approximately upright and not touch the bottom of the measuring cylinder when the measuring cylinder contains approximately 65 cm³ of water
- (iii) a balance capable of measuring masses up to 200 g to the nearest 0.1 g. Enough balances should be available so that candidates have easy, individual access
- (iv) a supply of water at room temperature, 100 cm³ will be sufficient. The water may be supplied in a beaker.

Action at changeover

Remove the test-tube from the measuring cylinder, if necessary, and empty the measuring cylinder. Ensure that the measuring cylinder is dry. Supply a clean, dry test-tube.

Spare materials and equipment should be available and can be provided without penalty. **Candidates should be made aware of this.**

Information required from the Supervisor:

The Supervisor is asked to carry out the experiments and to enter the results on a spare copy of the examination paper, clearly marked 'Supervisor's Results' and showing the Centre number. This should be done, out of sight of the candidates, using the same solutions, reagents, specimens and apparatus as the candidates.

A copy of the 'Supervisor's Results' should be returned with each packet of scripts. Failure to do so may cause the candidates to be penalised.

This form must be completed and returned in the envelope with the scripts together with the seating plan and the Supervisor's Results as mentioned on page 6.

May/June 2017

General

The Supervisor is invited to give details of any difficulties experienced by particular candidates giving their names and candidate numbers. These should include reference to:

- (a) difficulties due to faulty apparatus;
- (b) accidents to apparatus or materials;
- (c) physical handicaps, e.g. short sight, colour blindness;
- (d) any other information that is likely to assist the Examiner, especially if this cannot be discovered in the scripts;
- (e) any help given to a candidate.

The Supervisor is asked to supply the following information:

Plan of work benches, giving details by candidate numbers of the places occupied by the candidates for each session and a copy of the 'Supervisor's Results'.

NAME OF CENTRE

SIGNED

Supervisor

CENTRE NUMBER

DECLARATION (to be signed by the Supervisor)

The preparation of this practical examination has been carried out so as to maintain fully the security of the examination.

NAME

(in block capitals)

SIGNED (Supervisor)



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