
CO-ORDINATED SCIENCES

0654/52

Paper 5 Practical Test

October/November 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) a pea seedling (see note 1)
- (ii) a hand lens
- (iii) a white tile
- (iv) a 30 cm ruler graduated in mm
- (v) 10 cm³ seed paste, labelled **seed paste** (see note 2)
- [N] (vi) iodine solution and dropper, labelled **iodine solution**
- (vii) Benedict's solution and dropper, labelled **Benedict's solution**
- [C] (viii) biuret solution and dropper, labelled **biuret solution**
- (ix) access to a water bath at approximately 80 °C
- (x) 3 test-tubes (125 mm × 15 mm) and a means of supporting them
- (xi) test-tube holder.

Notes

1. Germinate the pea seeds and allow them to germinate until the root and shoot are at least 5 mm long.
2. Take some of the same peas as in note 1 but only soak overnight and liquidise 100 g with 100 cm³ distilled water to form a runny paste. This should be sufficient for about 10 candidates.

Question 2

Each candidate will require:

- (i) approximately 50 cm^3 0.4 mol dm^{-3} sodium carbonate solution, labelled **H**
- [MH] (ii) test-tube (approx. $125\text{ mm} \times 15\text{ mm}$) containing 1 cm depth of sodium carbonate solid, stoppered and labelled **H**
- (iii) approximately 5 cm^3 0.5 mol dm^{-3} ammonium sulfate solution, labelled **ammonium sulfate**
- (iv) approximately 5 cm^3 0.1 mol dm^{-3} copper sulfate solution, labelled **copper sulfate**
- (v) approximately 5 cm^3 0.1 mol dm^{-3} iron(III) sulfate solution, labelled **iron(III) sulfate**
- [MH][N](vi) approximately 5 cm^3 0.1 mol dm^{-3} zinc sulfate solution, labelled **zinc sulfate**
- (vii) approximately 10 cm^3 1.0 mol dm^{-3} hydrochloric acid, labelled **hydrochloric acid**
- [MH] (viii) approximately 10 cm^3 limewater, labelled **limewater**
- (ix) red litmus paper
- (x) blue litmus paper
- (xi) a delivery tube and bung to fit test-tube (approx. $125\text{ mm} \times 15\text{ mm}$)
- (xii) a stirring rod
- (xiii) 6 test-tubes (approx. $125\text{ mm} \times 15\text{ mm}$) and means to support them
- (xiv) test-tube holder
- (xv) Bunsen burner and means to light it
- (xvi) safety glasses or goggles.

Centres may provide fewer test-tubes, the minimum being 4 test-tubes ($125\text{ mm} \times 15\text{ mm}$). If this is the case, candidates will have to rinse test-tubes with distilled water, which must be provided.

Question 3

Each candidate will require:

- (i) a 250 cm³ graduated beaker – if the beaker is ungraduated, lines must be drawn on the side of the beaker to indicate the 100 cm³ level and the 200 cm³ level
- (ii) –10 °C to +110 °C thermometer with 1 °C graduations
- (iii) a supply of hot water (see note 1)
- (iv) a stopclock – candidates will be required to take readings at 30 s intervals.

Notes

1. Each candidate will require 300 cm³ of hot water. The hot water must be available throughout the experiment and should be maintained at an approximately constant temperature of between 80 °C and 100 °C.
2. Candidates should be warned of the dangers of burns or scalds when using very hot water.
3. There should be access to spare beakers, thermometers and hot water in case of breakages or spillage.

Action at Changeover

Empty the water from the beaker and check that the apparatus is intact.

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.

October/November 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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