



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

CHEMISTRY

5070/03

Paper 3 Practical Test

May/June 2007

CONFIDENTIAL INSTRUCTIONS

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

READ THESE INSTRUCTIONS FIRST

Teachers responsible for the examination are **NOT** allowed to consult the question paper before the day of the examination. However, they are asked to carry out any tests specified in these instructions.

On the day of the examination, the Supervisor is asked to perform the experiments in **Questions 1 and 2** and to record the results on a spare copy of the question paper clearly labelled "Supervisor's Results", followed by the number of the Centre. **This must be enclosed with the scripts. Unless this is done candidates may be unavoidably penalised.**

It is essential that candidates accept the descriptions of the solutions as they appear in the question paper.

If candidates from more than one Centre are taking the examination, it is **essential** that a copy of the Supervisor's Results should be sent with the scripts for each Centre.

Supervisors are advised to remind candidates that all substances in the examination should be treated with caution. Pipette fillers and safety goggles should be used where necessary.

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

F = highly flammable substance

H = harmful or irritating substance

O = oxidising substance

T = toxic substance

Hazard data sheets should be available from your suppliers.

If you have any problems or queries regarding these Instructions, please contact CIE

by e-mail: International@cie.org.uk,

by phone: +44 1223 553554,

by fax: +44 1223 553558,

stating the nature of the query and the syllabus number quoted above.

This document consists of **5** printed pages and **3** blank pages.



INSTRUCTIONS TO SUPERVISORS

In addition to the apparatus normally found in a chemistry laboratory, candidates will require the following.

For Question 1

[H] (a) A freshly prepared solution containing 39.0g of hydrated ammonium iron(II) sulphate, $(\text{NH}_4)_2\text{SO}_4 \cdot \text{FeSO}_4 \cdot 6\text{H}_2\text{O}$, dissolved in 1 dm^3 of approximately 0.5 mol/dm^3 sulphuric acid, labelled **P**.

[H] Alternatively this solution may be prepared by dissolving 27.0g of hydrated iron(II) sulphate, $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$, in 1 dm^3 of approximately 0.5 mol/dm^3 sulphuric acid.

Allow each candidate approximately 150 cm^3 .

[H] (b) A solution of 0.020 mol/dm^3 potassium manganate(VII) (3.2 g KMnO_4 dissolved in 1 dm^3 of distilled water), labelled **Q**.

Allow each candidate approximately 150 cm^3 .

Note: Some variation in the above concentrations is acceptable but it is **essential** that 25.0 cm^3 of **P** reacts with between 23.0 cm^3 and 27.0 cm^3 of **Q** (or 20.0 cm^3 of **P** reacts with between 18.0 cm^3 and 22.0 cm^3 of **Q**).

The following apparatus should be provided for each candidate.

a 50 cm^3 burette

a 25 cm^3 (or 20 cm^3) pipette

a flask or other suitable vessel for titration

1 × burette clamp

1 × stand

1 × funnel for filling burette

1 × pipette filler (or equivalent safety device)

1 × white tile

1 × wash bottle of distilled water

All candidates at a Centre should have pipettes of the same capacity.

For Question 2

Each candidate will require the following.

- [H] (a) A solution containing 100g of hydrated calcium chloride, $\text{CaCl}_2 \cdot 6\text{H}_2\text{O}$, dissolved in 1 dm^3 of distilled water, labelled **R**.

Allow each candidate approximately 15 cm^3 .

- [H] (b) A solution containing 56g of hydrated zinc sulphate, $\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$, dissolved in 1 dm^3 of distilled water, labelled **S**.

Allow each candidate approximately 15 cm^3 .

- [T] (c) A solution containing 66g of lead(II) nitrate, $\text{Pb}(\text{NO}_3)_2$, dissolved in 1 dm^3 of distilled water, labelled **T**.

Allow each candidate approximately 15 cm^3 .

(d) Access to:

- [C] (i) approximately 1.0 mol/dm^3 aqueous sodium hydroxide,
[C] (ii) approximately 0.5 mol/dm^3 sulphuric acid,
[H] (iii) a solution containing 20g of ammonium ethanedioate monohydrate (ammonium oxalate), $(\text{NH}_4)_2\text{C}_2\text{O}_4 \cdot \text{H}_2\text{O}$, dissolved in 1 dm^3 of distilled water, labelled 'aqueous ammonium ethanedioate',
[C] (iv) approximately 1.0 mol/dm^3 nitric acid,
[C] (v) approximately 0.05 mol/dm^3 aqueous silver nitrate.
[H] (vi) approximately 0.2 mol/dm^3 aqueous barium nitrate (or approximately 0.2 mol/dm^3 aqueous barium chloride, labelled 'barium nitrate'),
[T] (vii) the usual reagents needed to test for the gases mentioned in the syllabus, including limewater, approximately 0.1 mol/dm^3 aqueous potassium dichromate(VI), $\text{K}_2\text{Cr}_2\text{O}_7$, red and blue litmus paper or Universal Indicator paper, splints.

(e) A supply of test-tubes, approximately $125\text{ mm} \times 16\text{ mm}$.

(f) A stirring rod.

In both questions, more material may be issued without penalty but this should not be necessary.

It is advisable to issue candidates with a pipette filler (or equivalent safety device) and safety goggles.

The standard Report Form to be included with the scripts is given on pages 7 and 8. Please detach and enclose it with the scripts in the normal way.

See also the side-lined notes on pages 1, 7 and 8.

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This form must be completed and returned in the envelope with the scripts.

REPORT ON PRACTICAL CHEMISTRY

ORDINARY LEVEL

1 (a) *Supervisor's results*

Supervisors are asked to use a spare copy of the question paper to report their results for **Q.1 and Q.2** and enclose this copy of the question paper with the candidates' answers. This copy of the question paper should be clearly labelled 'Supervisor's Results'. Failure to enclose these results and this report form may lead to candidates being unavoidably penalised.

|| If candidates from more than one Centre are taking the examination, it is **essential** that a copy of the 'Supervisor's Results' should be sent with the scripts from **each Centre**. ||

(b) The index number of the candidates in each session were as follows.

First session

Second session

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- 2 The Supervisor is invited to report details of any difficulties experienced by candidates, giving names and index numbers.

This report should include reference to:

- (a) any general difficulties encountered in making preparation;
- (b) difficulties due to faulty apparatus or materials;
- (c) accidents to apparatus or materials.

Other cases of individual hardship, e.g. illness, disability, should be reported in the normal manner.

NAME OF CENTRE

SIGNED
Supervisor

CENTRE NUMBER

If the candidates' Centre number is different from the number of the Centre at which the examination was taken, the Supervisor should write **both Centre numbers in the space provided**.

Declaration (to be signed by the Principal).

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

SIGNED

NAME (in block capitals)

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