



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

CHEMISTRY

5070/03

Paper 3 Practical Test

October/November 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 and fittings normally found in a chemistry laboratory, candidates will require the following.

For Question 1

- [H] (a) A solution of approximately 0.1 mol/dm^3 hydrochloric acid, HCl , labelled **P**.

Allow each candidate approximately 200 cm^3 .

- [H] (b) A solution of approximately 0.1 mol/dm^3 sodium hydroxide (approximately 4.0 g/dm^3 NaOH) labelled **Q**.

Allow each candidate approximately 150 cm^3 .

- (c) Methyl Orange or Screened Methyl Orange indicator.

- [H] (d) Solid zinc carbonate labelled **R**.

n.b. Zinc carbonate will be available as “basic zinc carbonate”, the most common formula being $[\text{ZnCO}_3]_2 [\text{Zn}(\text{OH}_2)]_3$. Any combination of carbonate, hydroxide and water is acceptable.

Allow each candidate 0.2 g.

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

The following apparatus should be provided for each candidate;

1 $\times$ 50 cm^3 burette;

1 $\times$ 25 cm^3 (or 20 cm^3) pipette;

1 $\times$ flask or other suitable vessel for titration;

1 $\times$ burette clamp

1 $\times$ stand

1 $\times$ funnel for filling the burette

1 $\times$ white tile

1 $\times$ wash bottle of distilled water

1 $\times$ boiling-tube;

access to the usual reagents for testing gases, as for Question 2.

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

For Question 2

- [H]** (a) A solution prepared by dissolving 50 g of hydrated copper(II) sulphate, $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$, in 1 dm³ of distilled water, and then adding dilute aqueous ammonia until the precipitate just dissolves (approximately 400 cm³ of 2.0 mol/dm³ aqueous ammonia). The final solution should be labelled **S**. If the final solution appears cloudy, it should be filtered before use.

Allow each candidate approximately 30 cm³.

- (b)** Access to:

- [C]** (i) approximately 1.0 mol/dm³ hydrochloric acid,
[C] (ii) approximately 1.0 mol/dm³ nitric acid,
[H] (iii) approximately 0.2 mol/dm³ aqueous barium nitrate (or approximately 0.2 mol/dm³ aqueous barium chloride, labelled 'barium nitrate'),
 (iv) approximately 0.1 mol/dm³ aqueous potassium iodide,
 (v) approximately 0.2 mol/dm³ aqueous sodium thiosulphate,
[T] (vi) the usual reagents needed to test for the gases mentioned in the syllabus, including limewater, approximately 0.1 mol/dm³ aqueous potassium dichromate(VI), $\text{K}_2\text{Cr}_2\text{O}_7$, red and blue litmus paper or Universal Indicator paper and splints.
- (c)** A supply of test-tubes, approximately 125 mm × 16 mm.
- (d)** 3 × boiling-tubes, approximately 150 mm × 24 mm.
- (e)** 1 × stirring rod,
- (f)** 1 × Bunsen burner and test-tube holder.

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 record their results for **Q.1 and Q.2** and to enclose this copy of the question paper with the candidates' scripts. 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**. At larger centres where scripts are to be despatched in more than one envelope, it is essential that a copy of the Supervisor's Results is enclosed in each envelope.

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

First session

Second session

- 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 material;
- (c) accidents to apparatus or materials.

Other cases of individual hardship, e.g. illness, temporary disability, should be reported direct to CIE on the normal 'Application for Special Consideration' form.

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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