INSTRUCTIONS TO SUPERVISORS

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 a titration between solutions P and Q to ensure that the concentrations of the two solutions fall within the range given on page 2.

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.

If you have any problems or queries regarding these Instructions, please contact CIE by e-mail: International@ucles.org.uk, by phone: +44 1223 553554, by fax: +44 1223 553558, stating the nature of the query and the syllabus number quoted above.
For Question 1

Candidates will require the following.

(a) A solution of acidified hydrogen peroxide, labelled P. This solution may be prepared by diluting 500 cm$^3$ of a fresh sample of ‘20-volume’ hydrogen peroxide with 0.5 mol/dm$^3$ sulphuric acid until the final volume is 1.0 dm$^3$.

Allow each candidate approximately 30 cm$^3$.

(b) A solution of 0.05 mol/dm$^3$ aqueous hydrogen peroxide, labelled Q. This solution may be prepared by diluting 28 cm$^3$ of a fresh sample of ‘20-volume’ hydrogen peroxide with 0.5 mol/dm$^3$ sulphuric acid until the final volume is 1.0 dm$^3$.

Allow each candidate approximately 150 cm$^3$.

(c) 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 R.

Allow each candidate approximately 150 cm$^3$.

‘Pipette a 25.0 cm$^3$ portion of Q into a flask and titrate with R. At first the purple colour disappears rapidly. As the titration proceeds, this disappearance is less rapid. At the end-point, one drop of R produces a pink colour that does not disappear on swirling.’

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 R (or 20.0 cm$^3$ of Q reacts with between 18.0 cm$^3$ and 22.0 cm$^3$ of R).

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.

All candidates at a Centre should have pipettes of the same capacity.
For Question 2

Each candidate will require the following.

A solution containing 50 g of hydrated zinc sulphate, ZnSO₄·7H₂O, dissolved in 1 dm³ of distilled water, labelled T.

Allow each candidate approximately 30 cm³.

For both Questions

Candidates will require the following.

(a) Access to

(i) approximately 0.1 mol/dm³ potassium dichromate(VI),
(ii) approximately 0.20 mol/dm³ potassium iodide,
(iii) approximately 0.20 mol/dm³ aqueous iron(II) sulphate (a small volume of dilute sulphuric acid should be added to this solution to prevent hydrolysis),
(iv) approximately 1.0 mol/dm³ aqueous sodium hydroxide,
(v) solid manganese(IV) oxide labelled S,
(vi) approximately 1.0 mol/dm³ aqueous ammonia,
(vii) approximately 0.05 mol/dm³ aqueous silver nitrate,
(viii) approximately 1.0 mol/dm³ nitric acid,
(ix) approximately 0.2 mol/dm³ aqueous barium nitrate (or approximately 0.2 mol/dm³ aqueous barium chloride, labelled ‘barium nitrate’),
(x) the usual reagents needed to test for the gases mentioned in the syllabus, including limewater, approximately 0.1 mol/dm³ aqueous potassium dichromate(VI), K₂Cr₂O₇, red and blue litmus paper or Universal Indicator paper, splints.

(b) A supply of test-tubes, approximately 125 mm × 16 mm.

(c) 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.
REPORT ON PRACTICAL CHEMISTRY
ORDINARY LEVEL, JUNE 2003

1 (a) Supervisor's results

Supervisors must 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. 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.

<table>
<thead>
<tr>
<th>First session</th>
<th>Second session</th>
</tr>
</thead>
</table>

[Turn over]
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 UCLES on the normal 'Application for Special Consideration' form.

NAME OF CENTRE ................................................................................................................................

SIGNED .................................................................................................

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) ................................................................................................................................