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 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.
INSTRUCTIONS TO SUPERVISORS

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

For Question 1

(a) A solution of 0.05 mol/dm³ acidified hydrogen peroxide, H₂O₂, labelled P. This solution should be prepared by diluting 28 cm³ of a fresh sample of "20-volume" (6% w/v) hydrogen peroxide with 0.5 mol/dm³ sulphuric acid until the final volume is 1.0 dm³.

Allow each candidate approximately 150 cm³.

(b) A solution of 0.020 mol/dm³ potassium manganate(VII) (3.2 g KMnO₄ dissolved in 1 dm³ of distilled water), labelled Q.

Allow each candidate approximately 150 cm³.

Pipette a 25.0 cm³ (or 20.0 cm³) portion of P into a flask and titrate with Q. At first the purple colour disappears rapidly. As the titration proceeds, this disappearance is less rapid. At the end-point, one drop of Q 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 cm³ of P reacts with between 23.0 cm³ and 27.0 cm³ of Q (or 20.0 cm³ of P reacts with between 18.0 cm³ and 22.0 cm³ of Q).

The following apparatus should be provided for each candidate;
a 50 cm³ burette;
a 25 cm³ (or 20 cm³) pipette;
a flask or other suitable vessel for titration.

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

For Question 2

(a) A solution containing 70 g of sodium nitrite, NaNO₂, dissolved in 1 dm³ of distilled water, labelled R.

Allow each candidate approximately 30 cm³.

If sodium nitrite is not readily available it may be prepared by strongly heating solid sodium nitrate.

(b) A solution containing either 95 g of sodium metabisulphite, Na₂S₂O₅, or 250 g of sodium sulphite-7-water, Na₂SO₃.7H₂O, dissolved in 1 dm³ of distilled water, labelled S.

If possible a fresh bottle of sodium metabisulphite or sodium sulphite should be used to prepare this solution.

Allow each candidate approximately 30 cm³.
(c) Access to

[C] (i) a solution made by diluting concentrated hydrochloric acid with an equal volume of water and labelled ‘concentrated hydrochloric acid’,

(ii) a solution containing approximately 3.0 g/dm³ potassium manganate(VII) dissolved in 0.5 mol/dm³ sulphuric acid, labelled ‘acidified aqueous potassium manganate(VII)’,

(iii) approximately 1.0 mol/dm³ hydrochloric acid,

(iv) approximately 0.25 mol/dm³ aqueous potassium iodide, KI,

[H] (v) a solution containing approximately 55 g/dm³ hydrated iron(II) sulphate, FeSO₄·7H₂O, dissolved in 0.5 mol/dm³ sulphuric acid, labelled ‘aqueous iron(II) sulphate’,

[C] (vi) approximately 1.0 mol/dm³ sodium hydroxide,

(vii) small pieces of aluminium foil,

[H] (viii) approximately 0.2 mol/dm³ aqueous barium nitrate (or approximately 0.2 mol/dm³ aqueous barium chloride, labelled ‘barium nitrate’),

[C] (ix) a solution prepared by dissolving 50 g of hydrated iron(III) chloride, FeCl₃·6H₂O, in 1 dm³ aqueous sodium chloride containing 10 g/dm³ NaCl, labelled ‘aqueous iron(III) chloride’,

[T] (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.

(d) A supply of test-tubes, approximately 125 mm × 16 mm, five of which must be Pyrex or hard glass.

(e) A stirring rod.

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

Small amounts of irritant gas will be produced in Question 2. In a badly ventilated laboratory this may cause respiratory distress to asthmatic students.

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

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.
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 must use a spare copy of the question paper to record their results for Q.1 and Q.2 and 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.

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