



Pearson

# **Mark Scheme (Results)**

June 2017

IAL Chemistry (WCH06/01)  
Chemistry Laboratory Skills II

## **Edexcel and BTEC Qualifications**

Edexcel and BTEC qualifications come from Pearson, the world's leading learning company. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information, please visit our website at [www.edexcel.com](http://www.edexcel.com).

Our website subject pages hold useful resources, support material and live feeds from our subject advisors giving you access to a portal of information. If you have any subject specific questions about this specification that require the help of a subject specialist, you may find our Ask The Expert email service helpful.

[www.edexcel.com/contactus](http://www.edexcel.com/contactus)

## **Pearson: helping people progress, everywhere**

Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: [www.pearson.com/uk](http://www.pearson.com/uk)

Summer 2017

Publications Code WCH06\_01\_MS\_1706

All the material in this publication is copyright

© Pearson Education Ltd 2017

## General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.
- Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:
  - i) ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear
  - ii) select and use a form and style of writing appropriate to purpose and to complex subject matter
  - iii) organise information clearly and coherently, using specialist vocabulary when appropriate

## Using the Mark Scheme

Examiners should look for qualities to reward rather than faults to penalise. This does NOT mean giving credit for incorrect or inadequate answers, but it does mean allowing candidates to be rewarded for answers showing correct application of principles and knowledge. Examiners should therefore read carefully and consider every response: even if it is not what is expected it may be worthy of credit.

The mark scheme gives examiners:

- an idea of the types of response expected
- how individual marks are to be awarded
- the total mark for each question
- examples of responses that should NOT receive credit.

/ means that the responses are alternatives and either answer should receive full credit.

( ) means that a phrase/word is not essential for the award of the mark, but helps the examiner to get the sense of the expected answer.

Phrases/words in **bold** indicate that the meaning of the phrase or the actual word is **essential** to the answer.

ecf/TE/cq (error carried forward) means that a wrong answer given in an earlier part of a question is used correctly in answer to a later part of the same question.

Candidates must make their meaning clear to the examiner to gain the mark. Make sure that the answer makes sense. Do not give credit for correct words/phrases which are put together in a meaningless manner. Answers must be in the correct context.

### Quality of Written Communication

Questions which involve the writing of continuous prose will expect candidates to:

- write legibly, with accurate use of spelling, grammar and punctuation in order to make the meaning clear
- select and use a form and style of writing appropriate to purpose and to complex subject matter
- organise information clearly and coherently, using specialist vocabulary when appropriate.

Full marks will be awarded if the candidate has demonstrated the above abilities.

Questions where QWC is likely to be particularly important are indicated (QWC) in the mark scheme, but this does not preclude others.

Question Number	Acceptable Answer	Reject	Mark
1(a)(i)	<p>(Green solid) turns black OR Black solid formed ALLOW crystals / precipitate / powder for solid <b>(1)</b></p> <p>Colourless liquid (condenses at the mouth of the boiling tube) ALLOW steamy fumes / steam / white fumes / condensation <b>(1)</b></p> <p>IGNORE Gas / vapour evolved Effervescence / bubbling / fizzing Water / water vapour formed</p>	White gas	<b>(2)</b>

Question Number	Acceptable Answer	Reject	Mark
1(a)(ii)	<p><b>EITHER</b> Add (water) to cobalt((II)) chloride / <math>\text{CoCl}_2</math> (paper) <b>(1)</b></p> <p>(cobalt chloride) turns (from blue to) pink <b>(1)</b></p> <p><b>OR</b> Add (water) to <b>anhydrous</b> copper((II)) sulfate / <math>\text{CuSO}_4</math> <b>(1)</b></p> <p>(copper(II) sulfate) turns (from white to) blue <b>(1)</b></p> <p><b>OR</b> Add (water) to copper((II)) sulfate / <math>\text{CuSO}_4</math> <b>(1)</b></p> <p>(copper(II) sulfate) turns from white to blue <b>(1)</b></p> <p>If name and formula of reagents are given, both must be correct Ignore formula of product Observation mark dependent on test reagent being correct (or a near miss)</p>	<p>Boiling temperature is <math>100^\circ\text{C}</math></p> <p>Test with litmus</p> <p>Test with universal indicator</p>	<b>(2)</b>

Question Number	Acceptable Answer	Reject	Mark
<b>1(a)(iii)</b>	(Bubble the gas through) lime water / calcium hydroxide solution / $\text{Ca(OH)}_2(\text{aq})$ <b>(1)</b>  which turns milky / cloudy / chalky / forms white precipitate <b>(1)</b>  If name and formula are given, both must be correct  Observation mark dependent on test reagent being correct (or a near miss)  IGNORE Extinguishes a lighted splint Blue litmus turns red	Smokey/turbid	<b>(2)</b>

Question Number	Acceptable Answer	Reject	Mark
<b>1(b)(i)</b>	Effervescence / bubbling / fizzing <b>(1)</b>  IGNORE Gas / $\text{CO}_2$ / carbon dioxide evolved / steamy fumes  (Green solid dissolves and) a blue solution formed <b>(1)</b>	Just 'turns blue' blue precipitate	<b>(2)</b>

Question Number	Acceptable Answer	Reject	Mark
<b>1(b)(ii)</b>	$\text{Cu}_2\text{CO}_3(\text{OH})_2 + 2\text{H}_2\text{SO}_4 \rightarrow 2\text{CuSO}_4 + 3\text{H}_2\text{O} + \text{CO}_2$ OR multiples  Ignore state symbols even if incorrect.		<b>(1)</b>

Question Number	Acceptable Answer	Reject	Mark
<b>1(b)(iii)</b>	(aqueous) Ammonia / $\text{NH}_3(\text{aq})$  ALLOW $\text{NH}_4\text{OH}$ / amine by name or formula  IGNORE Dilute / concentrated		<b>(1)</b>

Question Number	Acceptable Answer	Reject	Mark
<b>1(c)(i)</b>	(Anhydrous) calcium chloride / $\text{CaCl}_2$ / magnesium sulfate / $\text{MgSO}_4$ / silica gel / sodium sulfate / $\text{Na}_2\text{SO}_4$ / calcium sulfate / $\text{CaSO}_4$  ALLOW Phosphorus(V) oxide / phosphorus pentoxide / $\text{P}_4\text{O}_{10}$ / $\text{P}_2\text{O}_5$	$\text{NaOH}$ / $\text{KOH}$ / $\text{CaO}$ / $\text{CuSO}_4$ / $\text{CoCl}_2$ / $\text{H}_2\text{SO}_4$ Just 'silica'	<b>(1)</b>

Question Number	Acceptable Answer	Reject	Mark
<b>1(c)(ii)</b>	Soda lime / sodium hydroxide / $\text{NaOH}$ / potassium hydroxide / $\text{KOH}$  ALLOW Calcium hydroxide / $\text{Ca}(\text{OH})_2$	$\text{CaO}$ / calcium oxide / any solutions  Limewater	<b>(1)</b>

Question Number	Acceptable Answer	Reject	Mark
<b>1(c)(iii)</b>	Heat malachite solid /sample to constant mass OR Heat malachite, weigh and heat, re-weigh until two successive weighings are the same  ALLOW No change in mass of malachite / test tube OR No change in mass of X / Y / U-tube(s)  IGNORE No further change in colour No more gas / water produced	Just 'heat to constant mass'	<b>(1)</b>

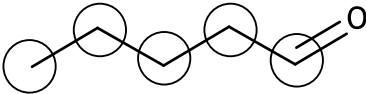
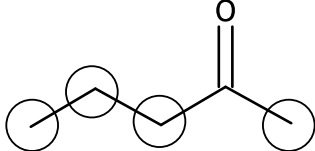
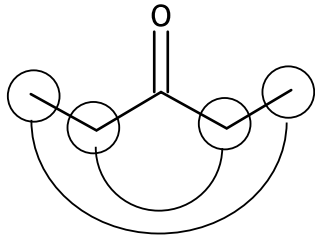
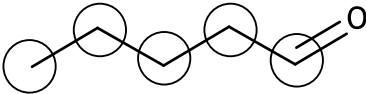
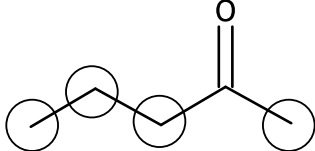
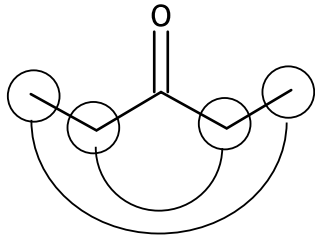
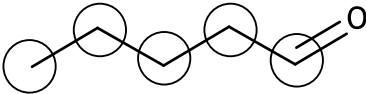
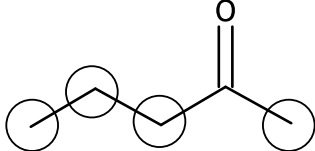
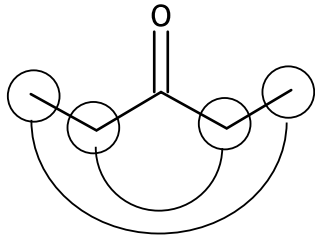
Question Number	Acceptable Answer	Reject	Mark
<b>1(c)(iv)</b>	Mass of malachite / sample at the start OR Mass of residue/black solid/copper(II) oxide after heating IGNORE Change in mass of malachite <b>(1)</b>  <b>Change</b> in mass of solid <b>X and</b> solid <b>Y</b> OR Mass of <b>both</b> U tubes at the start <b>and</b> finish of the experiment <b>(1)</b>  IGNORE Masses / amounts / moles of malachite Masses / amounts / moles of water and CO <sub>2</sub>		<b>(2)</b>

**(Total for Question 1 = 15 marks)**



Question Number	Acceptable Answer	Reject	Mark																			
<b>2(a)(i)</b>	<table border="1" data-bbox="384 239 1099 952"> <thead> <tr> <th data-bbox="384 239 550 383" rowspan="2">Test</th> <th colspan="3" data-bbox="550 239 1099 293">Observations</th> </tr> <tr> <th data-bbox="550 293 740 383">pentanal</th> <th data-bbox="740 293 930 383">pentan-2-one</th> <th data-bbox="930 293 1099 383">pentan-3-one</th> </tr> </thead> <tbody> <tr> <td data-bbox="384 383 550 579">2,4-dinitrophenylhydrazine</td> <td data-bbox="550 383 740 579">red / orange / yellow ppt</td> <td data-bbox="740 383 930 579">red / orange / yellow ppt</td> <td data-bbox="930 383 1099 579">red / orange / yellow ppt</td> </tr> <tr> <td data-bbox="384 579 550 750">Tollens' reagent</td> <td data-bbox="550 579 740 750">silver mirror / black ppt / grey ppt</td> <td data-bbox="740 579 930 750">no change</td> <td data-bbox="930 579 1099 750">no change</td> </tr> <tr> <td data-bbox="384 750 550 952">Iodoform test</td> <td data-bbox="550 750 740 952">no change</td> <td data-bbox="740 750 930 952">(pale) yellow ppt OR antiseptic smell</td> <td data-bbox="930 750 1099 952">no change</td> </tr> </tbody> </table> <p data-bbox="384 987 616 1021">2,4-DNPH tests</p> <p data-bbox="384 1062 756 1097">all three correct scores 2</p> <p data-bbox="384 1097 491 1131">ALLOW</p> <p data-bbox="384 1131 686 1166">two correct scores 1</p> <p data-bbox="384 1166 1018 1237">three precipitates but no / incorrect colour scores 1</p> <p data-bbox="384 1237 1099 1272">three 'solutions' scores zero <b>(2)</b></p> <p data-bbox="384 1310 1099 1345">each other positive test scores 1 <b>(2)</b></p> <p data-bbox="384 1384 986 1455">Penalise <b>omission</b> of ppt in Tollens' and iodoform tests once only</p> <p data-bbox="384 1494 981 1565">Four <b>correct</b> 'no change' scores 1 mark IGNORE</p> <p data-bbox="384 1565 1099 1599">Extra 'no changes' <b>(1)</b></p>	Test	Observations			pentanal	pentan-2-one	pentan-3-one	2,4-dinitrophenylhydrazine	red / orange / yellow ppt	red / orange / yellow ppt	red / orange / yellow ppt	Tollens' reagent	silver mirror / black ppt / grey ppt	no change	no change	Iodoform test	no change	(pale) yellow ppt OR antiseptic smell	no change	<p data-bbox="1120 426 1251 498">solution for ppt</p> <p data-bbox="1120 778 1238 849">orange ppt</p>	<b>(5)</b>
Test	Observations																					
	pentanal	pentan-2-one	pentan-3-one																			
2,4-dinitrophenylhydrazine	red / orange / yellow ppt	red / orange / yellow ppt	red / orange / yellow ppt																			
Tollens' reagent	silver mirror / black ppt / grey ppt	no change	no change																			
Iodoform test	no change	(pale) yellow ppt OR antiseptic smell	no change																			

Question Number	Acceptable Answer	Reject	Mark
<b>2(a)(ii)</b>	<p>The two methods must be marked separately</p> <p><b>MP1 and MP2 Method 1</b></p> <p>Iodine (solution) / I<sub>2</sub>((aq)) / iodine in potassium iodide (solution) <b>(1)</b></p> <p>Sodium hydroxide (solution) / NaOH((aq)) OR Potassium hydroxide (solution) / KOH((aq)) <b>(1)</b></p> <p><b>MP1 and MP2 Method 2</b></p> <p>Add potassium iodide / KI((aq)) ALLOW Add sodium iodide / NaI((aq)) <b>(1)</b></p> <p>Add sodium chlorate(I) / sodium hypochlorite / NaOCl((aq)) <b>(1)</b></p> <p><b>MP3</b></p> <p>MP3 is dependent on two correct reagents from a single method or on 'iodine and alkali' in method 1</p> <p>Any indication that the inorganic reagents are in (aqueous) solution including "dilute"</p> <p>OR (Method 1 only) Add alkali to iodine until (brown solution) turns colourless</p> <p>OR Warm OR Heat in a water bath</p> <p>ALLOW Just 'heat' <b>(1)</b></p>	<p>Just 'alkali'</p> <p>Ethanol as a solvent</p> <p>Reflux</p>	<b>(3)</b>

Question Number	Acceptable Answer	Reject	Mark												
<b>2(b)</b>	<table border="1" data-bbox="363 206 1026 1080"> <thead> <tr> <th data-bbox="363 206 778 329">Structure</th> <th data-bbox="778 206 1026 329">Number of Proton Environments</th> <th data-bbox="1026 206 1137 329"></th> </tr> </thead> <tbody> <tr> <td data-bbox="363 329 778 534">  </td> <td data-bbox="778 329 1026 534">5</td> <td data-bbox="1026 329 1137 534"><b>(1)</b></td> </tr> <tr> <td data-bbox="363 534 778 767">  </td> <td data-bbox="778 534 1026 767">4</td> <td data-bbox="1026 534 1137 767"><b>(1)</b></td> </tr> <tr> <td data-bbox="363 767 778 1080">  </td> <td data-bbox="778 767 1026 1080">2</td> <td data-bbox="1026 767 1137 1080"><b>(1)</b></td> </tr> </tbody> </table> <p data-bbox="352 1116 868 1151">If all three marks are not awarded</p> <p data-bbox="352 1187 1038 1259">All three diagrams correct with <b>correct</b> linked proton environments scores 2</p> <p data-bbox="352 1295 979 1366">All three diagrams correct showing proton environments only scores 1</p> <p data-bbox="352 1403 1110 1474">All three 'numbers of proton environments' correct scores 1 mark</p> <p data-bbox="352 1511 1110 1612">ALLOW any indication of identical environments in propan-3-one</p>	Structure	Number of Proton Environments			5	<b>(1)</b>		4	<b>(1)</b>		2	<b>(1)</b>		<b>(3)</b>
Structure	Number of Proton Environments														
	5	<b>(1)</b>													
	4	<b>(1)</b>													
	2	<b>(1)</b>													

**(Total for Question 2 = 11 marks)**

Question Number	Acceptable Answer	Reject	Mark
<b>3(a)(i)</b>	(High resistance) voltmeter OR Potentiometer  ALLOW high resistivity voltmeter	Low resistance voltmeter Galvanometer Voltmeter cell	<b>(1)</b>

Question Number	Acceptable Answer	Reject	Mark
<b>3(a)(ii)</b>	Copper / Cu	Cu <sup>2+</sup> / Cu and any other metal	<b>(1)</b>

Question Number	Acceptable Answer	Reject	Mark
<b>3(a)(iii)</b>	Platinum / Pt		<b>(1)</b>

Question Number	Acceptable Answer	Reject	Mark
<b>3(a)(iv)</b>	Filter paper <b>(1)</b>  IGNORE salt bridge  (soaked in saturated solution of) potassium nitrate / KNO <sub>3</sub> ALLOW NaNO <sub>3</sub> / KCl / NaCl <b>(1)</b>	Just "paper"   solids	<b>(2)</b>

Question Number	Acceptable Answer	Reject	Mark
<b>3(a)(v)</b>	<p>Solution containing <b>soluble</b> iron(II) and iron(III) compounds identified by name or formula e.g. iron(II) sulfate / FeSO<sub>4</sub> <b>and</b> iron(III) chloride / FeCl<sub>3</sub></p> <p>ALLOW Solution containing Fe<sup>2+</sup> <b>and</b> Fe<sup>3+</sup> <b>(1)</b></p> <p><b>Both</b> solutions 1 mol dm<sup>-3</sup> in iron ions</p> <p>ALLOW Solutions equimolar in iron <b>ions</b> <b>(1)</b></p> <p>Name or formula of <b>soluble</b> iron compounds <b>with</b> 1 mole of Fe<sup>x+</sup> per mole of both compounds e.g. 0.5 mol dm<sup>-3</sup> Fe<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub> and 1.0 mol dm<sup>-3</sup> FeSO<sub>4</sub> scores (2) marks</p> <p>If no other mark scored 1.0 mol dm<sup>-3</sup> Fe<sup>2+</sup> / Fe<sup>3+</sup> OR 0.5 mol dm<sup>-3</sup> Fe<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub> <b>OR</b> 1.0 mol dm<sup>-3</sup> FeSO<sub>4</sub> scores (1) marks</p>		<b>(2)</b>

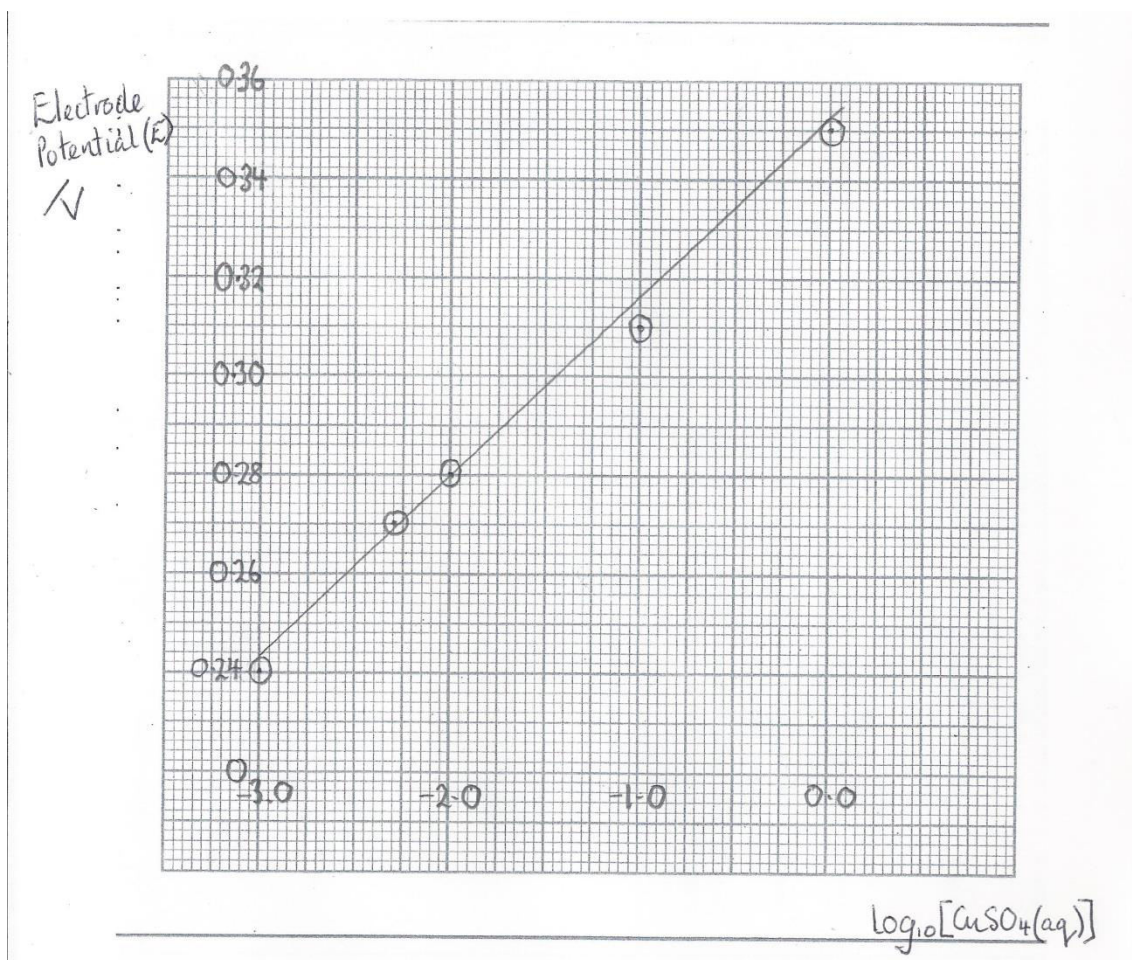
Question Number	Acceptable Answer	Reject	Mark
<b>3(b)(i)</b>	<p>2Fe<sup>3+</sup> + Cu → 2Fe<sup>2+</sup> + Cu<sup>2+</sup> OR Multiples OR ⇌ for →</p> <p>IGNORE State symbols even if incorrect.</p>	<p>Reverse reaction</p> <p>Equations with uncancelled electrons</p>	<b>(1)</b>

Question Number	Acceptable Answer	Reject	Mark
<b>3(b)(ii)</b>	<p>(literature value) <math>E^{\circ}_{\text{cell}} = 0.77 - 0.34 = (+)0.43</math> (V)</p> <p>TE on reverse reaction in (b)(i) (<math>E^{\circ}_{\text{cell}} = -0.43</math> (V)) <b>(1)</b></p> <p>% error = <math>100 \times (0.43 - 0.35) \div 0.43 = 18.6</math> %</p> <p>TE on incorrect calculation of <math>E^{\circ}_{\text{cell}}</math> but literature value <b>must</b> be the denominator <b>(1)</b></p> <p>IGNORE SF except 1 SF</p>	22.9 % 20 %	<b>(2)</b>

Question Number	Acceptable Answer	Reject	Mark
<b>3(c)(i)</b>	<p><b>MP1</b> Use a <b>pipette</b> to measure 25.0 (or 10.0) cm<sup>3</sup> of the 1.0 mol dm<sup>-3</sup> copper(II) sulfate solution ALLOW Burette <b>(1)</b></p> <p><b>MP2</b> Transfer this to a 250.0 (or 100.0) cm<sup>3</sup> volumetric / graduated / standard flask <b>(1)</b></p> <p><b>MP3</b> Make solution up to the mark with (distilled) water <b>and then</b> mix / shake / invert <b>(1)</b></p> <p>If MP1 and MP2 not awarded, mention of pipette and volumetric flask scores 1</p>	<p>Measuring cylinder / beaker / syringe</p> <p>No mention of appropriate volume</p>	<b>(3)</b>

Question Number	Acceptable Answer	Reject	Mark
<b>3(c)(ii)</b>	<p>Increases the possibility of contamination of Cu<sup>2+</sup> / CuSO<sub>4</sub> due to residues from earlier experiments in beakers or on salt bridge / electrodes</p> <p>ALLOW Reverse explanation i.e. low concentration to high reduces contamination risk</p>		<b>(1)</b>

Question Number	Acceptable Answer	Reject	Mark
<b>3(c)(iii)</b>	<p>See below for example</p> <p>Choice of scale to cover at least half the grid in both directions <b>and</b> labelled axes with units on y axis, which may be labelled E/V. x axis may be <math>\log_{10}[\text{Cu}^{2+}(\text{aq})]</math> or <math>\log_{10}[\text{Cu}^{2+}]</math> or <math>\log_{10}[\text{CuSO}_4(\text{aq})]</math> or <math>\log_{10}[\text{CuSO}_4]</math> <b>(1)</b></p> <p>All points given in table correctly plotted TE on axes used <b>(1)</b></p> <p>Any sensible smooth best fit <b>straight</b> line <b>(1)</b></p>	<p>Non-linear scale scores (0)</p> <p>Any units on x-axis</p> <p>log scale reversed</p> <p>point to point line</p>	<b>(3)</b>



Question Number	Acceptable Answer	Reject	Mark
<b>3(c)(iv)</b>	Electrode potential / E is proportional to $\log_{10}$ (concentration of copper(II) ions) / $\log_{10}[\text{Cu}^{2+}(\text{aq})]$ OR E $\propto \log_{10}[\text{Cu}^{2+}(\text{aq})]$ / $\log_{10}[\text{CuSO}_4(\text{aq})]$ ALLOW log / lg for $\log_{10}$  IGNORE 'directly' / reference to exponential relationships  No TE on incorrectly plotted graph	E $\propto$ $[\text{Cu}^{2+}(\text{aq})]$	<b>(1)</b>

**(Total for Question 3 = 18 mark)**



Question Number	Acceptable Answer	Reject	Mark
<b>4(a)</b>	Oxidising  ALLOW "oxidising agent/liquid" "oxidative" / "oxidating" /"oxidant"	Flammable / inflammable	<b>(1)</b>

Question Number	Acceptable Answer	Reject	Mark
<b>4(b)</b>	Reaction (between concentrated nitric and sulfuric acid) is (very) exothermic  ALLOW Generates a lot of heat  IGNORE Vigorous / violent / prevents splashing / volatile To slow down the reaction / prevent high rise in temperature	Reaction between sulfuric acid and water  To quench the reaction	<b>(1)</b>

Question Number	Acceptable Answer	Reject	Mark
<b>4(c)</b>	To minimise / prevent formation of 1-methyl-2,4-dinitrobenzene OR dinitration / trinitration / further substitution OR To ensure (only) monosubstitution  IGNORE Further reactions occur		<b>(1)</b>

Question Number	Acceptable Answer	Reject	Mark
<b>4(d)</b>	To neutralise / react with / remove (remaining traces of / excess) acid / nitric acid / sulphuric acid  IGNORE Impurities		<b>(1)</b>

Question Number	Acceptable Answer	Reject	Mark
<b>4(e)</b>	Lower value (from) 218-221 (°C)  Upper value (to) 223-226 (°C)	222 °C on its own or as one of the range values	<b>(1)</b>

Question Number	Acceptable Answer	Reject	Mark
<b>4(f)</b>	<p><b>Either</b>            (Remove 1-methyl-4-nitrobenzene by) further distillation at (about) 240°C</p> <p>ALLOW            between 238°C and 290 °C            OR            less than 300°C            (and then recrystallisation / crystallisation from the distillation residue)</p> <p><b>Or</b>            Further distillation / fractional distillation <b>and</b> followed by recrystallisation / crystallisation from the distillation residue</p> <p>ALLOW            Steam distillation <b>and</b> because 1-methyl-2,4-dinitrobenzene decomposes around its boiling temperature</p>	Distillation at or above 300 °C	<b>(1)</b>

**(Total for Question 4 = 6 marks)**

---

**TOTAL FOR PAPER = 50 MARKS**

Further copies of this publication are available from  
Edexcel Publications, Adamsway, Mansfield, Notts, NG18 4FN

Telephone 01623 467467

Fax 01623 450481

Email [publication.orders@edexcel.com](mailto:publication.orders@edexcel.com)

Order Code

For more information on Edexcel qualifications, please visit our website  
[www.edexcel.com](http://www.edexcel.com)

Pearson Education Limited. Registered company number 872828  
with its registered office at Edinburgh Gate, Harlow, Essex CM20 2JE

**Ofqual**  
.....



Llywodraeth Cynulliad Cymru  
Welsh Assembly Government

