

# Group 7

## Mark Scheme

<b>Level</b>	International A Level
<b>Subject</b>	Chemistry
<b>Exam Board</b>	Edexcel
<b>Topic</b>	Chemistry Lab Skills 1
<b>Sub Topic</b>	Group 7
<b>Booklet</b>	Mark Scheme

**Time Allowed:** 57 minutes

**Score:** /47

**Percentage:** /100

**Grade Boundaries:**

A*	A	B	C	D	E	U
>85%	77.5%	70%	62.5%	57.5%	45%	<45%

Question Number	Acceptable Answers	Reject	Mark
<b>1(a)(i)</b>	(Freshly prepared) starch (solution/indicator)  ALLOW Startch <b>(1)</b>  Blue-black / blue / dark blue/ black to colourless  IGNORE ...to clear <b>(1)</b>  Mark independently	Purple to...	2

Question Number	Acceptable Answers	Reject	Mark
<b>1(a)(ii)</b>	Pale yellow/straw coloured	Brown/yellow/brown-yellow/tawny	1

**In 1(b) to (d)(ii)**

Penalise rounding errors **only once**

Penalise 1 SF **only once**

(Both may be penalised)

Question Number	Acceptable Answers	Reject	Mark
<b>1(b)</b>	<b>Fully scroll down answer</b> Number of moles of electrons  = $\frac{0.2 \times 15 \times 60}{96\,500}$ = $1.865 \times 10^{-3} / 0.001865$ (mol)  Correct answer with no working scores 1  IGNORE SF except 1SF  IGNORE electrons for units		1

Question Number	Acceptable Answers	Reject	Mark
<b>1(c)(i)</b>	19.45 18.6(0) 19.05 18.7(0) (cm <sup>3</sup> )		1

Question Number	Acceptable Answers	Reject	Mark
<b>1(c)(ii)</b>	<p><b>Method 1</b></p> <p>Titres/results/runs 1 <b>and</b> 3 should be discarded <b>(1)</b></p> <p>as they are not concordant/within <math>(\pm) 0.2 \text{ cm}^3</math></p> <p>IGNORE</p> <p>The(ir) first reading is zero</p> <p>OR</p> <p>Reading(s) too far from the others <b>(1)</b></p> <p><b>Method 2</b></p> <p>Run 1 as rangefinder/rough <b>(1)</b></p> <p>Run 2 as not concordant / within <math>(\pm) 0.2 \text{ cm}^3</math> <b>(1)</b></p> <p><b>Use method giving higher mark</b></p>		2

Question Number	Acceptable Answers	Reject	Mark
<b>1(c)(iii)</b>	<p>18.65/18.7 (<math>\text{cm}^3</math>)</p> <p>ALLOW</p> <p>TE from (i) and (ii)</p> <p>Runs 2, 3, 4 give 18.783/18.78/18.8</p> <p>Runs 1, 3, 4 give 19.067/19.07/19.1</p> <p>Runs 3, 4 give 18.875/ 18.88/ 18.9</p>	<p>18.6</p> <p>19.06</p> <p>18.87</p>	1

Question Number	Acceptable Answers	Reject	Mark
<b>1(c)(iv)</b>	<p><math>\frac{18.65 \times 0.0100}{1000} = 1.865 \times 10^{-4} / 0.0001865 \text{ (mol)}</math></p> <p>TE from (iii)</p>		1

Question Number	Acceptable Answers	Reject	Mark
<b>1(c)(v)</b>	$1.865 \times 10^{-4} \times 100/10$ $= 1.865 \times 10^{-3} / 0.001865(\text{mol})$ TE from (iv)		1

Question Number	Acceptable Answers	Reject	Mark
<b>1(d)(i)</b>	$2\text{S}_2\text{O}_3^{2-}(\text{aq}) \rightarrow \text{S}_4\text{O}_6^{2-}(\text{aq}) + 2\text{e}(-)$ <b>(1)</b> $2\text{I}^-(\text{aq}) \rightarrow \text{I}_2(\text{aq}) + 2\text{e}(-)$ <b>(1)</b>  <b>OR</b> $2\text{S}_2\text{O}_3^{2-}(\text{aq}) - 2\text{e}(-) \rightarrow \text{S}_4\text{O}_6^{2-}(\text{aq})$ <b>(1)</b> $2\text{I}^-(\text{aq}) - 2\text{e}(-) \rightarrow \text{I}_2(\text{aq})$ <b>(1)</b>		2

Question Number	Acceptable Answers	Reject	Mark
<b>1(d)(ii)</b>	$1.865 \times 10^{-3} / 0.001865$ (mol) of electrons... lost/gained/equals/reacts with/taken from/ given to/equivalent to $1.865 \times 10^{-3}/0.001865$ (mol) $\text{S}_2\text{O}_3^{2-}$ <b>NOTE</b> Numbers do not have to be the same eg 0.001865 electrons with 0.001906 $\text{S}_2\text{O}_3^{2-}$ <b>OR</b> 1 mol of electrons equivalent to 1 mol $\text{S}_2\text{O}_3^{2-}$ <b>ALLOW</b> Any indication of 1:1 ratio for electrons: $\text{S}_2\text{O}_3^{2-}$ IGNORE Answers referring to equations only.		1

Question Number	Acceptable Answers	Reject	Mark
<b>1(e)(i)</b>	Uncertainty in titre value: $(\pm)0.51/0.514\%$ <b>OR</b> $\frac{2 \times 0.05}{19.45} \times 100 =$ $0.5$ <b>(1)</b> Uncertainty in the pipette measurement: $\frac{(0.04 \times 100)}{(10.0)} = (\pm)0.4\%$ <b>(1)</b>		

Question Number	Acceptable Answers	Reject	Mark
<b>1(e)(ii)</b>	The uncertainty is not significant because the data are rounded to 1 SF / produce a ratio to the nearest whole number ALLOW Uncertainties are very small/ < 5% / < 1% Other reasonable points: eg insignificant as only equation is required	...is significant Uncertainties do not matter as titres have been averaged	1

**(Total for Question 1 = 16 marks)**

Question Number	Acceptable Answers	Reject	Mark
<p><b>2(a)(i)</b></p>	<p><b>First mark</b></p> <p>Nichrome (wire)</p> <p>ALLOW</p> <p>Recognisable spelling – nichrome/nichrome</p> <p>OR</p> <p>Platinum (wire)</p> <p>ALLOW</p> <p>Recognisable spelling – platinum</p> <p>Pt</p> <p>If both name and formula given both must be correct <b>(1)</b></p> <p><b>Second mark</b></p> <p><b>Depends</b> on <b>first</b> mark</p> <p><b>Except</b> for near miss – eg nichromate/nickel/chromium</p> <p>(The alloy/metal is) unreactive/inert/not reactive/(very) stable/has a high melting temperature</p> <p>ALLOW</p> <p>Less reactive/low(er) reactivity</p> <p>No flame colour</p> <p>OR</p> <p>Does not react with HCl/air <b>(1)</b></p> <p>IGNORE</p> <p>It can withstand the heat</p> <p>No impurities</p>	<p>'Nichromate'</p> <p>Nickel/Ni</p> <p>OR</p> <p>Chromium/Cr</p> <p>High boiling point</p>	<p>2</p>

Question Number	Acceptable Answers	Reject	Mark
<b>2(a)(ii)</b>	Chlorides are (more) volatile  Comment – ALLOW Sulfates/nitrates less volatile  ALLOW  (nearly all) chlorides are soluble  IGNORE  Other acids too reactive/oxidizing	Dissolves impurities  HCl (more) volatile  HCl dissolves chlorides  HCl does not affect flame colour	1

Question Number	Acceptable Answers	Reject	Mark
<b>2(a)(iii)</b>	Group 1: Lithium/Li <sup>+</sup> <b>(1)</b>  IGNORE Rubidium/Rb <sup>+</sup>  Group 2: Strontium/Sr <sup>2+</sup>  IGNORE Calcium/Ca <sup>2+</sup> <b>(1)</b>  Penalise the omission of or incorrect charge once only	Any other metal ions	2

Question Number	Acceptable Answers	Reject	Mark
<b>2(b)(i)</b>	Hydroxide / OH <sup>-</sup> /OH	OH- / -OH  O <sup>2-/-2</sup>  Carbonate/hydrogen carbonate  Just 'hydroxyl'	1
	ALLOW hydroxyl <b>ion</b>		

Question Number	Acceptable Answers	Reject	Mark
<b>2(b)(ii)</b>	$H^+ + OH^- \rightarrow H_2O$ OR $H_3O^+ + OH^- \rightarrow 2H_2O$ Ignore state symbols even if incorrect ALLOW multiples ALLOW TE from carbonate/hydrogen carbonate/oxide in 1(c)(i)		1

Question Number	Acceptable Answers	Reject	Mark
<b>2(c)(i)</b>	Strontium sulfate/sulphate((VI)) ALLOW $SrSO_4$ TE from calcium in (a)(iii) <b>No TE</b> from Group 1 ion in (a)(iii) here	Any other spelling of sulfate eg sulfurate $BaSO_4$	1

Question Number	Acceptable Answers	Reject	Mark
<b>2(c)(ii)</b>	$Sr^{2+}(aq) + SO_4^{2-}(aq) \rightarrow SrSO_4(s)$ TE from (c)(i) ALLOW TE on Li or Rb in (a)(iii) here TE for formation of $BaSO_4$ if given in 1(c)(i)	Inclusion of $H^+$ , $OH^-$ , and $H_2O$	1



Question Number	Acceptable Answers	Reject	Mark
<b>2(d)</b>	Sr(OH) <sub>2</sub> TE for calcium/barium from (c)(i) TE from Li and Rb from (c)(i) ALLOW TE on oxide/carbonate/hydrogen carbonate in (b)(i)	TE from any other anions in (b)(i)	1

(Total for Question 2 = 10 marks)

Question Number	Acceptable Answers	Reject	Mark
<b>3(a)(i)</b>	Ammonia / NH <sub>3</sub>	Ammonium / NH <sub>4</sub> <sup>+</sup>	1

Question Number	Acceptable Answers	Reject	Mark
<b>3(a)(ii)</b>	Bromide / Br <sup>-</sup>  If name and formula are given <b>both</b> must be correct	Bromine, Br <sub>2</sub> , Br Iodide, I <sup>-</sup> , Chloride, Cl <sup>-</sup>	1

Question Number	Acceptable Answers	Reject	Mark
<b>3(a)(iii)</b>	Precipitate does <b>not</b> dissolve / no change / remains  ALLOW Precipitate insoluble/ Precipitate is partially soluble / sparingly soluble  TE from (a)(ii) for chloride dissolves / iodide does <b>not</b> dissolve	"Resolved" for "dissolved"  Precipitate becomes paler/ colour does not change	1

Question Number	Acceptable Answers	Reject	Mark
<b>3(a)(iv)</b>	NH <sub>4</sub> Br / NH <sub>4</sub> <sup>+</sup> Br <sup>-</sup>  ALLOW correct formula even if charge missing on ion in (ii)  TE on incorrect halide anion or halide ion with incorrect negative charge if formula otherwise correct No TE on a formula with a metal cation Ignore name even if incorrect	NH <sub>3</sub> Br	1

Question Number	Acceptable Answers	Reject	Mark
<b>3(b)(i)</b>	C=C bonds absent / alkene absent  IGNORE "it is an alkane" / contains C-C / It is saturated / is a saturated hydrocarbon	Just "double bonds absent"	1

Question Number	Acceptable Answers	Reject	Mark
<b>3(b)(ii)</b>	(Fumes are )HCl/ hydrogen chloride ALLOW Hydrochloric acid <b>(1)</b>  (Formula) (-) OH /O-H ALLOW C-OH <b>(1)</b>	OH <sup>-</sup> /alcohol/ (-) CH <sub>2</sub> OH COOH C <sub>n</sub> H <sub>2n+1</sub> OH	2

Question Number	Acceptable Answers	Reject	Mark
<b>3(b)(iii)</b>	Fizzing/ bubbles/ effervescence (of colourless gas)/ (sodium/ it) dissolves/ (sodium/ it) disappears/ <b>white</b> solid forms  ALLOW <b>White</b> precipitate forms <b>Gas</b> evolved which pops with a lighted splint/ which ignites  IGNORE Gets warmer/ Heat is evolved/ temperature rises/ vigorous reaction Vapour forms Sodium sinks/floats	References to coloured gas or coloured fumes  <b>white</b> solid disappears / dissolves  Just "solution is colourless"	1

Question Number	Acceptable Answers	Reject	Mark
<b>3(b)(iv)</b>	<p>(Identity) Methanol / CH<sub>3</sub>OH OR Displayed/skeletal formula <b>(1)</b></p> <p>(Justification) (only) alcohol with M<sub>r</sub> = 32 / methanol has M<sub>r</sub> = 32 / CH<sub>3</sub>OH = 32/ right hand peak has mass 32/ right hand peak has M<sub>r</sub> of methanol</p> <p>NOTE Allow mark for any mention of 32 in conjunction with methanol.</p> <p>OR Other use of mass spec data: Peak at <i>m/e</i> 15 is for CH<sub>3</sub>(<sup>+</sup>) <b>and</b> 32-15=OH(<sup>+</sup>) OR 32 – (mass of) OH = CH<sub>3</sub>(<sup>+</sup>) OR Peak at 31 is for CH<sub>3</sub>O(<sup>+</sup>)/ CH<sub>2</sub>OH(<sup>+</sup>)</p> <p>IGNORE Negative or missing charges on peaks <b>(1)</b></p> <p>Second mark depends on identification of methanol.</p>	<p>Correct name with wrong formula or vice versa.</p> <p>Highest peak has M<sub>r</sub> of methanol</p> <p>Just "Peak at <i>m/e</i> 15 is for CH<sub>3</sub>(<sup>+</sup>) "</p> <p>Peak at 29 is for COH / CHO</p>	2

**Total for Question 3 = 10 marks**

Question Number	Acceptable Answers	Reject	Mark
<b>4(a)(i)</b>	Sodium (ion)/ Na <sup>+</sup>  If name AND formula are given BOTH must be correct	Na	1

Question Number	Acceptable Answers	Reject	Mark
<b>4(a)(ii)</b>	Carbonate (ion)/ CO <sub>3</sub> <sup>2-</sup> OR CO <sub>3</sub> <sup>-2</sup> / CO <sub>3</sub> <sup>--</sup>  OR Hydrogencarbonate (ion)/ HCO <sub>3</sub> <sup>-</sup>  ALLOW Hydrogen carbonate (ion)  If name AND and formula are given BOTH must be correct		1

Question Number	Acceptable Answers	Reject	Mark
<b>4(a)(iii)</b>	Ca(OH) <sub>2</sub> (aq) + CO <sub>2</sub> (g) → CaCO <sub>3</sub> (s)+H <sub>2</sub> O(l)  Reactants with state symbols (1) Products and state symbols (1)  Allow All formulae correct but one or more errors in state symbols (1)  All formulae and state symbols correct but incorrect balancing numbers included (1)  Ca <sup>2+</sup> (aq) + 2OH <sup>-</sup> (aq) for Ca(OH) <sub>2</sub> (aq)  Ignore multiples if equation is balanced	H <sub>2</sub> O(aq) Ca(OH) <sub>2</sub> (l)  Ca <sup>2+</sup> (aq) + CO <sub>3</sub> <sup>2-</sup> (aq) → CaCO <sub>3</sub> (s)	2

Question Number	Acceptable Answers	Reject	Mark
<b>4(b)(i)</b>	Crimson/red/ dark red/bright red / persistent red/scarlet (coloured flame)	Orange Brick red Carmine	1

Question Number	Acceptable Answers	Reject	Mark
<b>4(b)(ii)</b>	White precipitate  ALLOW White solid/crystals ppt/ppte for precipitate  Ignore comments about getting darker/turning purple on standing	Cream ppt Yellow ppt Off-white ppt  Additional incorrect observations eg white ppt and effervescence or steamy fumes  Change on standing to cream or yellow	1

Question Number	Acceptable Answers	Reject	Mark
<p><b>4(b) (iii)</b></p>	<p>TEST Add <b>dilute</b> (aqueous) ammonia (solution) / NH<sub>3</sub> / NH<sub>3</sub> (aq) ALLOW Dilute NH<sub>4</sub>OH / ammonium hydroxide</p> <p>IGNORE Additional test with concentrated NH<sub>3</sub> (1)</p> <p>RESULT Precipitate dissolves / (colourless) solution forms ALLOW mixture dissolves / precipitate disappears/ solid dissolves / precipitate is soluble (1)</p> <p>Second mark depends on use of ammonia in first, even concentrated.</p> <p>ALLOW TEST add <b>concentrated</b> sulfuric acid to <b>ppt</b> (1)</p> <p>RESULT Steamy fumes (only)/ no brown <b>AND</b> no purple fumes ALLOW White fumes (1)</p> <p>Second mark depends on use of sulfuric acid.</p>	<p>Just "ammonia / NH<sub>3</sub>" Use of ammonia on glass rod</p> <p>Incorrectly identified precipitate dissolves e.g. strontium chloride dissolves</p> <p>White smoke</p>	<p>2</p>

Question Number	Acceptable Answers	Reject	Mark
<b>4(b)(iv)</b>	(goes) dark / purple / grey  ALLOW Black / lilac (1)  Silver / Ag (forms) (1)	Goes blue-black  Silver colour/ mirror  Ag <sup>+</sup> / silver ions	2

Question Number	Acceptable Answers	Reject	Mark
<b>4(c)</b>	$\text{Sr}^{2+} + \text{CO}_3^{2-} \rightarrow \text{SrCO}_3$  Ignore state symbols, even if incorrect Ignore full equation, written as "rough" work and mark ionic equation only.		1

**Total for Question 4 = 11 marks**



Question Number	Acceptable answers	Reject	Mark
<b>5(a)</b>	Ba <sup>2+</sup> / barium (ion)  If charge is given must be correct  ALLOW Ba <sup>+2</sup>	Ba Ba <sup>+</sup> Cu <sup>2+</sup> Correct name with incorrect formula or vice versa	<b>1</b>

Question Number	Acceptable answers	Reject	Mark
<b>5(b)</b>	Carbonate / CO <sub>3</sub> <sup>2-</sup>  ALLOW Hydrogencarbonate / HCO <sub>3</sub> <sup>-</sup> / sulfite / sulfate (IV) / SO <sub>3</sub> <sup>2-</sup> / hydroxide / OH <sup>-</sup> / oxide / O <sup>2-</sup>	Barium carbonate  sulfate	<b>1</b>

Question Number	Acceptable answers	Reject	Mark
<b>5(c)</b>	Cl <sup>-</sup> / chloride (ion)  ALLOW Cl <sup>-1</sup> , Cl <sup>1-</sup>	Cl, Cl <sub>2</sub> , Chlorine (ion) Correct name with incorrect formula or vice versa	<b>1</b>

Question Number	Acceptable answers	Reject	Mark
<b>5(d) (i)</b>	(The white precipitate goes ) darker / purple / grey / lilac	(Goes) black, silver, silvery, cream, pale yellow, green	<b>1</b>

Question Number	Acceptable answers	Reject	Mark
<b>5(d) (ii)</b>	Silver  ALLOW Ag	Ag <sup>+</sup>	<b>1</b>

Question Number	Acceptable answers	Reject	Mark
<b>5(e) (i)</b>	White precipitate  ALLOW White solid Both words needed	Just "goes white"	<b>1</b>

Question Number	Acceptable answers	Reject	Mark
<p><b>5(e)(ii)</b></p>	<p> <math display="block">\text{BaCl}_2(\text{aq}) + \text{H}_2\text{SO}_4(\text{aq}) \rightarrow \text{BaSO}_4(\text{s}) + 2\text{HCl}(\text{aq})</math> </p> <p>OR</p> <p> <math display="block">\text{Ba}^{2+}(\text{aq}) + \text{SO}_4^{2-}(\text{aq}) \rightarrow \text{BaSO}_4(\text{s})</math> </p> <p>OR</p> <p> <math display="block">\text{Ba}^{2+}(\text{aq}) + 2\text{Cl}^-(\text{aq}) + 2\text{H}^+(\text{aq}) + \text{SO}_4^{2-}(\text{aq}) \rightarrow \text{BaSO}_4(\text{s}) + 2\text{Cl}^-(\text{aq}) + 2\text{H}^+(\text{aq})</math> </p> <p><b>First mark</b></p> <p>All formulae correct (1)</p> <p>TE from the cation in 1(a) and the anion in 1(c) if the charge on the ion chosen is correct eg <math>\text{Cu}^{2+}</math></p> <p><b>Second mark</b></p> <p>Balancing and state symbols (1)</p> <p>ALLOW second mark for ss and balancing in equation with mixture of ions and molecules</p> <p> <math display="block">\text{Ba}^{2+}(\text{aq}) + \text{H}_2\text{SO}_4(\text{aq}) \rightarrow \text{BaSO}_4(\text{s}) + 2\text{H}^+(\text{aq})</math>                     scores 1                 </p> <p>TE for second mark based on incorrect formulae only if a balanced equation forming a precipitate is given eg</p> <p> <math display="block">2\text{BaCl}(\text{aq}) + \text{H}_2\text{SO}_4(\text{aq}) \rightarrow \text{Ba}_2\text{SO}_4(\text{s}) + 2\text{HCl}(\text{aq})</math>                     scores 1                 </p> <p>No TE for equations with incorrect products e.g. <math>\text{H}_2</math> and <math>\text{Cl}_2</math></p>	<p>Any incorrect formulae</p> <p>For first mark, equation with mixture of ions and molecules eg</p> <p> <math display="block">\text{Ba}^{2+}(\text{aq}) + \text{H}_2\text{SO}_4(\text{aq}) \rightarrow \text{BaSO}_4(\text{s}) + 2\text{H}^+(\text{aq})</math> </p> <p><math>\text{HCl}(\text{g})</math></p> <p>Equations in which hydrogen or sulfur dioxide is formed</p>	<p><b>2</b></p>

Question Number	Acceptable answers	Reject	Mark
<b>5(f) (i)</b>	HCl / hydrogen chloride  ALLOW (Droplets of) hydrochloric acid	Hydrogen chloride ions Hydrochloric acid gas	<b>1</b>

Question Number	Acceptable answers	Reject	Mark
<b>5(f) (ii)</b>	(mix gas being tested with ) ammonia / hold open ammonia bottle near fumes (1)  ALLOW (test with) ammonia (gas) Use of ammonia solution if clearly on a glass rod / stopper  White smoke / white solid forms (1)  Allow <b>dense white</b> fumes, <b>white</b> precipitate  No TE if gas in (f)(i) is not HCl No TE in second mark if test given for first mark is incorrect	Dissolve in water and test with silver nitrate  Indicators  Misty / smoky fumes  Just "White fumes"	<b>2</b>

**Total for Question 5 = 11 marks**

Question Number	Acceptable Answer	Reject	Mark
<b>6 (a)</b>	(Flame colour is) yellow-red / brick-red / orange-red / red-yellow  ALLOW Red	Crimson, orange, yellow	<b>1</b>

Question Number	Acceptable Answer	Reject	Mark
<b>6(b)</b>	Yellow solid / crystals / precipitate (both words required) <b>(1)</b>  (Precipitate) does not dissolve / does not change / is insoluble / remains <b>(1)</b>  ALLOW Goes lighter / paler yellow "Nothing happens / no reaction" ONLY IF there is reference to precipitate in first part	Cream precipitate	<b>2</b>

Question Number	Acceptable Answers	Reject,	Mark
<b>6(c)</b>	(Dark) Brown / yellow / yellow-brown / red-brown / (pale) straw coloured <b>(1)</b>  ALLOW combinations of colours or reverse of colour orders in pairs  Iodine / tri-iodide ion / $I_2$ / $I_3^-$ <b>(1)</b>	Red, orange, purple, violet, (dark) grey, black  Iodide, $I^-$ , $I^{3-}$	<b>2</b>

Question Number	Acceptable Answers	Reject	Mark
<b>6(d)</b>	Blue-black  ALLOW Just "blue" / just "black" / dark blue	Purple Blue-black to colourless	<b>1</b>

Question Number	Acceptable Answer	Reject	Mark
<b>6(e)</b>	(The precipitate is) calcium carbonate / $CaCO_3$ <b>(1)</b>  (The gas is) carbon dioxide / $CO_2$ <b>(1)</b>  Mark independently		<b>2</b>

Question Number	Acceptable Answers	Reject	Mark
<b>6(f)(i)</b>	<p>Iodine / I<sub>2</sub> <b>(1)</b></p> <p>(Shiny) black solid / grey solid / purple fumes</p> <p>State AND colour needed</p> <p>ALLOW</p> <p>Vapour or gas for fumes</p> <p>Violet for purple</p> <p>(Dark) brown solution</p> <p>Purple in organic solvent <b>(1)</b></p> <p>No TE for a test on an incorrect product, or if no product is given</p>	<p>Brown solid</p> <p>Just "purple"</p>	<b>2</b>

Question Number	Acceptable Answers	Reject	Mark
<b>6(f)(ii)</b>	<p>Hydrogen sulphide / H<sub>2</sub>S (1)</p> <p>(Colourless gas with) bad egg smell / turns lead ethanoate (paper) black / turns lead nitrate (paper) black (1)</p> <p>OR</p> <p>Sulfur / S (1)</p> <p>Yellow solid ALLOW Yellow precipitate (1)</p> <p>ALLOW Sulfur dioxide / SO<sub>2</sub> (1)</p> <p>(Colourless gas with) choking smell / pungent smell / acrid smell / Turns... (potassium / sodium) dichromate((VI)) (paper) green blue litmus (paper) red Universal Indicator (paper) red potassium manganate((VII)) colourless potassium permanganate colourless</p> <p>ALLOW Correct formulae (1)</p> <p>IGNORE Bubbles / effervescence / misty fumes / steamy fumes No TE for a test on an incorrect product, or if no product is given</p>		<b>2</b>

**Total for Question 6 = 12 marks**