

Assessment Schedule – 2006**Science: Describe aspects of chemistry (90189)****Evidence Statement**

Question	Evidence	Achievement	Achievement with Merit	Achievement with Excellence
1(a)	proton + electron \ominus neutron \bigcirc	(a) correct		
1(b)(i)	Diagram showing $12 \times \bigcirc$ and $11 +$ in nucleus; 11 electrons orbit nucleus arranged 2, 8, 1.	Electrons correct, ie 2,8,1 configuration.	Achievement PLUS 11 protons and 12 neutrons in nucleus.	
1(b)(ii)	Sodium atom and sodium ion both have 11 protons in nucleus and both have 12 neutrons in the nucleus, ie no differences in nucleus. Sodium atom has one more electron than sodium ion and has three shells containing electrons. PLUS Sodium ion has a positive charge of one, whereas sodium atom is neutral.	Comparison between atom and ion of TWO of the 4 criteria (number of protons, neutrons and electrons and charge), eg: Atom loses electron to form ion and they have the same number of protons. OR The atom is neutral it loses 1 electron to become a positive ion.	Comparison between atom and ion of THREE of the 4 criteria (number of protons, neutrons and electrons and charge), eg: Atom loses electron to form ion and they have the same number of protons and neutrons. OR Atom has 11 protons, 12 neutrons, 11 electrons and ion has 11 protons, 12 neutrons and 10 electrons.	Comparison between atom and ion of FOUR of the 4 criteria (number of protons, neutrons and electrons and charge) with specific details. PLUS The reason behind ion formation based on shells / electron configuration.
1(c)	lead nitrate	correct		
1(d)	K ₂ S	correct		
1(e)(i) (ii)	7 atoms 14 atoms	7 atoms 14 atoms Both need to be correct.		
2(a)(i) (ii)	Core material B Covering material D Links made to properties – • core material conducts electricity and can be drawn into a wire / easily shaped • covering material does not conduct electricity and is easy to shape • reference to density is not required.	B and D correct. Core must conduct electricity AND covering material does not conduct electricity.	B and D correct Core material conducts electricity and can be easily shaped. Covering material does not conduct electricity and is easy to shape.	
2(a)(iii)	copper	copper		
2(b)(i)	A metal's valence electrons are able to move from atom to atom, allowing the electrons to move within an electric field.	Free / moving electrons.	"Free", ie outer / valence / delocalised / wandering electrons that can move freely.	
2(b)(ii)	Atoms are closely packed, ie many atoms in a small volume / space.	Metal is closely / tightly packed.		

2(c)	Physical properties density shiny	Chemical properties reacts with water reacts with air	3 out of 4 correct. Items in both columns not counted.		
2(d)	magnesium hydroxide + hydrogen OR magnesium oxide + hydrogen (for steam).		As for Evidence column.		
2(e)	$\text{Mg} + 2\text{HCl} \rightarrow \text{MgCl}_2 + \text{H}_2$		3 correct formulae required.	All 4 formulae correct, but equation not balanced.	Correct balanced equation.
3(a)(i) (ii)	magnesium sulfate sulfuric acid		One correct.		
3(b)	sulfuric acid + magnesium hydroxide \rightarrow magnesium sulfate + water		Word equation (error may be carried from (a) and (b)).		
3(c)	Products of the reaction are neutral as the amount of H_3O^+ = amount of OH^-		Products are neutral / reaches pH of 7.	Products of the reaction are neutral / pH is 7 and (as the amount of H_3O^+ = amount of OH^-) the amount of acid balances the amount of base.	
4 (a)(i) (ii) (iii)	red green / blue blue / purple		2 out of 3 correct.		
4(b)(i)	Bubbles form.		Bubbles form.		
4(b)(ii)	$\text{K}_2\text{CO}_3 + 2\text{HCl} \rightarrow 2\text{KCl} + \text{CO}_2 + \text{H}_2\text{O}$		3 correct formulae required.	All 5 formulae correct, but equation not balanced.	As in evidence column.
4(c)	At the beginning – red due to HCl (acidic) • at neutralisation – yellow / green due to NaCl and H_2O (or no HCl) present • beyond neutral point – blue with NaCl and NaOH present (basic).	• red • yellow / green • blue / purple described.		As for Achievement, PLUS species / acidity identified at two points, eg: • red (due to the acid) • yellow / green • blue / purple (as now basic).	As for Achievement PLUS species identified at three of the points. • beginning red HCl • Neutral yellow / green NaCl + H_2O • beyond blue / purple NaOH.

Judgement Statement

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Achievement	Achievement with Merit	Achievement with Excellence
NINE questions answered correctly. Minimum of $9 \times A$	THIRTEEN questions answered correctly, including at least FIVE at Merit level. Minimum of $5 \times M + 8 \times A$	FOURTEEN questions answered correctly, including at least TWO at Excellence level (one from Q2(e) or Q4(b)(ii), and one from Q1(b)(ii) or Q4(c)) and at least FOUR at Merit level. Minimum of $2 \times E + 4 \times M + 8 \times A$ (One E must be a balanced equation.)