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Mark Scheme (Results)

Summer 2012

GCSE Chemistry
5CH2F/01

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Question Number	Answer	Acceptable answers	Mark
1(a)(i)	**A** dissolving		**(1)**

Question Number	Answer	Acceptable answers	Mark
1(a)(ii)	A description including the following points • thermometer (1) • take temperature before and after (1)		**(2)**

Question Number	Answer	Acceptable answers	Mark
1(a)(iii)	endothermic		**(1)**

Question Number	Answer	Acceptable answers	Mark
1(b)(i)	carbon dioxide	CO_2 reject CO^2 / CO2	**(1)**

Question Number	Answer	Acceptable answers	Mark
1(b)(ii)	faster fizzing / dissolves faster	faster reaction more fizzing	**(1)**

Question Number	Answer	Acceptable answers	Mark
1(b)(iii)	An explanation including the following points • powder them / use smaller pieces (1) • larger surface area (1)	break them up ignore changes to anything other than marble chips ignore stir	**(2)**

Question Number	Answer	Acceptable answers	Mark
2(a)	• lead nitrate (1) • sodium carbonate (1)	either order	**(2)**

Question Number	Answer	Acceptable answers	Mark
2(b)	An explanation including the following points • (white) {solid / precipitate / cloudiness} (1) • barium sulfate insoluble (1)		**(2)**

Question Number	Answer	Acceptable answers	Mark
2(c)	(barium sulfate) opaque to X-rays / shows up on X-rays / safe to use because it does not enter blood / is insoluble	shows up stomach etc so X-ray is clearer ignore does not react with body fluids / water / blood	**(1)**

Question Number	Answer	Acceptable answers	Mark
2(d)(i)	**C** ionic		**(1)**

Question Number	Answer	Acceptable answers	Mark
2(d)(ii)	**D** 851 ºC		**(1)**

Question Number	Answer	Acceptable answers	Mark
2 (e)	Na_2CO_3	CO_3Na_2	**(1)**

Question Number	Answer	Acceptable answers	Mark
3(a)(i)	**C** immiscible		**(1)**

Question Number	Answer	Acceptable answers	Mark
3(a)(ii)	A description including two of the following points • open tap (1) • run off lower layer / water (1) • pour off remainder/oil through top of funnel (1)	let water out stop before oil comes out	**(2)**

Question Number	Answer	Acceptable answers	Mark
3(b)(i)	melts	turns into liquid reject burns	**(1)**

Question Number	Answer	Acceptable answers	Mark
3(b)(ii)	An explanation including **two** of the following points • sand has a giant (molecular), (covalent) structure (1) • strong (covalent) bonds (in sand) (1) • high amounts of energy / heat needed (to break bonds) (1) • (so) high melting point (1) • Bunsen does not get hot enough (1)	ignore forces (so) melting point 1610 ºC (so) does not melt Bunsen cannot reach melting point	**(2)**

Question Number	Answer	Acceptable answers	Mark
3(b)(iii)	**A** simple molecular, covalent		**(1)**

Question Number	Answer	Acceptable answers	Mark
3(c)(i)	only one spot / do not separate	reject contain only one colour	**(1)**

Question Number	Answer	Acceptable answers	Mark
3(c)(ii)	An explanation including two of the following points • mixture / not pure (1) • (contains) X / blue (dye)(1) • (contains) Y / yellow (dye)(1)	contains two dyes	**(2)**

Question Number	Answer	Acceptable answers	Mark
4(a)	An explanation including **two** of the following points • electrons shared (1) • pair (of electrons)(1) • hydrogen (atom) and oxygen (atom) each supply one electron (to shared pair)		**(2)**

Question Number	Answer	Acceptable answers	Mark
4 (b)	(2 x 1)(1) +16 (1) = 18	18 (2) 17 (1)	**(2)**

Question Number	Answer	Acceptable answers	Mark
4(c)(i)	$2H_2 + O_2 \rightarrow 2H_2O$ • reactant formulae (1) • product formula (1) • balancing correct formulae (1)	reject O^2 H^2 reject H^2O H2O	**(3)**

Question Number	Answer	Acceptable answers	Mark
4(c)(ii)	$\frac{2}{4}$ (1) x 100 (%) (1) (=50%)	0.5 / $\frac{1}{2}$ (1) 50(%) (2) 200% (1)	**(2)**

Question Number	Answer	Acceptable answers	Mark
4(c)(iii)	reaction incomplete / losses (during reaction) / spillages (during reaction)	(water) evaporated {water /steam / oxygen / hydrogen /gas} escaped / lost / leaked less hydrogen burned than expected not all hydrogen burned not enough oxygen present (for all hydrogen to burn) reject unwanted / unexpected reactions occurred	**(1)**

Question Number	Answer	Acceptable answers	Mark
5(a)	C		**(1)**

Question Number	Answer	Acceptable answers	Mark
5(b)	they are in same group / group 1/(both) have one outer electron	both alkali metals	**(1)**

Question Number	Answer	Acceptable answers	Mark
5(c)	An explanation including the following points • elements in same group have similar properties (1) • so looked at elements {above /below / in group 3} (1)	across a period elements show gradual / regular variation in properties	**(2)**

Question Number	Answer	Acceptable answers	Mark
5(d)	An explanation including the following points • two places further on (in period) (1) • (so) 29 + 2 (=31) / 31 (1)	in each successive element (in period) one more (proton) /atomic number increases by one 31 with no explanation (1)	**(2)**

Question Number		Indicative Content	Mark
QWC	***5(e)**	A description including some of the following points • protons in nucleus • 9 protons • neutrons in nucleus • 10 neutrons • electrons in shells • 9 electrons • first shell 2 • second shell 7 • electronic configuration 2.7 • (some or all of this could be shown on a diagram)	**(6)**
Level	**0**	No rewardable content	
1	**1 - 2**	• a limited description e.g. gives the number of protons • the answer communicates ideas using simple language and uses limited scientific terminology • spelling, punctuation and grammar are used with limited accuracy	
2	**3 - 4**	• a simple description e.g. protons and neutrons in the nucleus and electrons around the nucleus OR e.g. has 9 protons 9 electrons 10 neutrons • the answer communicates ideas showing some evidence of clarity and organisation and uses scientific terminology appropriately • spelling, punctuation and grammar are used with some accuracy	
3	**5 - 6**	• a detailed description e.g. gives the electronic configuration and the position of the protons and neutrons OR e .g. has 9 protons (9 electrons) 10 neutrons and gives electronic configuration • the answer communicates ideas clearly and coherently uses a range of scientific terminology accurately • spelling, punctuation and grammar are used with few errors	

Question Number	Answer	Acceptable answers	Mark
6(a)	**B** 1		**(1)**

Question Number	Answer	Acceptable answers	Mark
6(b)	An explanation including the following points • (delocalised) electrons (1) • (electrons) move (through metal structure) (1)	ions and electrons move worth (1) only	**(2)**

Question Number	Answer	Acceptable answers	Mark
6(c)(i)	yellow	reject orange-yellow etc	**(1)**

Question Number	Answer	Acceptable answers	Mark
6(c)(ii)	A description including the following points • make solution of sodium chloride (1) (add (dilute) nitric acid) • when silver nitrate solution added white {solid / precipitate} (formed) (1) **OR** A description including the following points • add sodium chloride to silver nitrate (solution) (1) (add (dilute) nitric acid) • white {solid / precipitate} (formed) (1)	react sodium chloride with silver nitrate	**(2)**

Question Number		Indicative content	Mark
QWC	***6(c)(iii)**	A description including some of the following points **practical procedure** • burning (sodium) • placed in chlorine in gas jar /conical flask /tall beaker • white (fumes) • (sodium chloride forms) as a solid **safety** • done in fume cupboard • (because) chlorine toxic **theoretical** • sodium (atoms) lose electrons • one electron • forms sodium ions • Na^+ / with positive charge • chlorine (atoms) gain electrons • one electron • forms chloride ions • Cl^- / with negative charge • forms NaCl • attraction between opposite charged ions • ionic bond	**(6)**
Level	**0**	no rewardable material	
1	**1-2**	• a limited description e.g. put burning sodium in chlorine OR e.g. sodium atoms lose electrons • the answer communicates ideas using simple language and uses limited scientific terminology • spelling, punctuation and grammar are used with limited accuracy	
2	**3-4**	• a simple description e.g. put burning sodium into a gas jar of chlorine in a fume cupboard OR e.g. sodium atoms lose electrons and chlorine atoms gain electrons • the answer communicates ideas showing some evidence of clarity and organisation and uses scientific terminology appropriately • spelling, punctuation and grammar are used with some accuracy	
3	**5-6**	• a detailed description e.g. put burning sodium into a gas jar of chlorine in a fume cupboard because chlorine is toxic, white solid formed OR e.g. a sodium atom loses one electron which is transferred to a chlorine atom, forms Na^+ and Cl^- / ionic bond formed • the answer communicates ideas clearly and coherently uses a range of scientific terminology accurately • spelling, punctuation and grammar are used with few errors	

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