

Mark Scheme (Results)

June 2011

360Science

GCSE Additional Science
Structured Paper C2 (5018H/1H)

GCSE Chemistry
Structured Paper C2 (5038H/1H)

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**5018H & 5038H Mark Scheme
June 2011**

Question Number	Answer	Allow	Reject/ Ignore	Mark
1 (a)	C_3H_8 ; ($\rightarrow C_3H_6 + H_2$) ;	<p>multiples e.g. $2 C_3H_8 \rightarrow 2 C_3H_6 + 2 H_2$ etc</p> <p>If 1 formula correct scores 1 mark whatever balancing applied; if two formulae correct scores 2 marks only if balancing correct, otherwise 1 mark</p>		(2)

Question Number	Answer	Allow	Reject/ Ignore	Mark
1 (b)(i)	$3 \times 12 + 6$; (= 42)			(1)

Question Number	Answer	Allow	Reject/ Ignore	Mark
1 (b)(ii)	contains (one) double bond / double bonds / $>C=C<$;		Ignore spare bonds / references to alkenes Ignore references to carbon not bonded to maximum number of hydrogens	(1)

Question Number	Answer	Allow	Reject/ Ignore	Mark
1 (b)(iii)	poly(propene);	polypropene	Incorrect spelling	(1)

Question Number	Answer	Allow	Reject/ Ignore	Mark
1 (b)(iv)	little or no waste / little by-products / high % reactants end up as products ;	High output compared to low input	Reject references to yield / quantity produced / energy / environment	(1)

Question Number	Answer	Allow	Reject/ Ignore	Mark
1 (b)(v)	chloroethane ;		chloroethene	(1)

Question Number	Answer	Allow	Reject	Mark
2 (a)	number of protons / contains 3 protons;		any other number of protons /references to neutrons or electrons	(1)

Question Number	Answer	Allow	Reject/ Ignore	Mark
2 (b)	they have one electron in the outer shell / all form +1 ion / all lose one electron / electronic configuration ends in one ;			(1)

Question Number	Answer	Allow	Reject/ Ignore	Mark
2 (c)	Na_2O / Na^+O^{2-} ;	$\text{ONa}_2, (\text{Na}^+)_2\text{O}$		(1)

Question Number	Answer	Allow	Ignore	Mark
2 (d)	1. outer electron shielded from nucleus by more electrons /more shells/more shielding/outer shell electron further away from nucleus ; 2. outer electron more easily lost / less attractive force on outer electron ;		more outer shells	(2)

Question Number	Answer	Allow	Reject/ Ignore	Mark
2 (e)	1. {free/delocalised/sea of} electrons ; 2. electrons {move / flow} ;			(2)

Question Number	Answer	Allow	Ignore	Mark
2 (f)	low density / strong / lightweight /corrosion resistant ;		light / malleable / hard / high melting point / rigid	(1)

Question Number	Answer	Allow	Reject/ Ignore	Mark
3 (a)	1. shared pair ; 2. rest of diagram correct (consequential on first mark) ;	any combination of dots or crosses	Ignore inner shells Symbols not required but if given must be correct for second mark	(2)

Question Number	Answer	Allow	Reject/ ignore	Mark
3 (b) (i)	different number of neutrons / two more neutrons in chlorine 37/ chlorine 35 contains 18 neutrons and chlorine 37 contains 20 neutrons ;		ignore references to mass number / abundance reject incorrect references to protons and electrons	(1)

Question Number	Answer	Allow	Reject	Mark
3 (b) (ii)	$\frac{(35 \times 75) + (37 \times 25)}{100}$; (= 35.5) (other working acceptable)	any correct working producing 35.5	35.5 with no working	(1)

Question Number	Answer	Allow	Reject/ Ignore	Mark
3 (c) (i)	1. one electron is transferred ; 2. from Na(atom)to Cl (atom) ;	sodium loses an electron and chlorine gains an electron = 2	Any reference to covalent bonding scores 0	(2)

Question Number	Answer	Allow	Reject/ Ignore	Mark
3 (c) (ii)	Any from the following 1. strong (electrostatic) forces (between ions); 2. large amounts of {energy / heat} required (to break bonds) ;	bonds /particles	reject intermolecular forces / atoms / covalent bonds for point 1 ignore 'bonds hard to break' / references to temperature	(2)

Question Number	Answer	Allow	Reject/ Ignore	Mark
3 (c)(iii)	$\frac{3.51}{5.85} \times 100$; (= 60%)	60% with no working		(1)

Question Number	Answer	Allow	Reject/ Ignore	Mark
4 (a)	fuel / solvent / to make perfumes / sterilising /sanitising gels/ making esters / disinfectant / cleaning wounds / biofuel		Ignore vague answers such as cleaning products (unspecified), petrol, cosmetics, biodiesel	(1)

Question Number	Answer	Allow	Ignore	Mark
4 (b)	1. both forward and back reactions occurring / (reaction) reversible ; 2. (both reactions) occur at the same rate ; 3. the {amounts of substances present / concentrations } are unchanged	(forward and back) reactions cancel	References to yield	(2)

Question Number	Answer	Allow	Reject	Mark
4 (c) (i)	by using a (suitable) catalyst /phosphoric acid;		any other named catalyst / changes in conditions	(1)

Question Number	Answer	Allow	Ignore	Mark
4 (c) (ii)	1. forward reaction favoured/ equilibrium moves to right ; 2. takes place with a decrease in the total number of {molecules / particles} / volume ;		any references to rate ignore references to numbers of atoms	(2)

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