



Mark Scheme (Results)

March 2012

GCSE Chemistry
5CH1F/01

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

Question Number	Answer	Mark
1(b)	<pre> graph LR A[aluminium] --- B[for water pipes] C[copper] --- D[making aircraft bodies] E[iron] --- F[making steel] G[to surface roads] </pre>	(3)

Question Number	Answer	Acceptable answers	Mark
1(c)	<p>an explanation linking the following points</p> <ul style="list-style-type: none"> (both) water and oxygen (are needed) (1) only B has both / A has no oxygen / C has no water (1) 	<p>allow air for oxygen allow reacts with water and oxygen</p> <p>allow air for oxygen A only has water/C only has air A and/or C only have one/do not have both</p>	(2)

Question Number	Answer	Acceptable answers	Mark
1(d)	<p>an explanation linking two of</p> <ul style="list-style-type: none"> • conserves reserves (of iron ore) (1) • reduces a stated problem of mining (1) eg reduces carbon dioxide emissions (from machinery/trucks) /specific environmental problem reduced eg noise pollution/dust pollution • reduces (scrap iron going to) landfill 	<p>resources/supplies reserves/resources/supplies last longer limited supply of iron ore reserves/resources/supplies will not run out (as quickly) ignore saves iron unqualified ignore iron is non-renewable</p> <p>allow visual pollution avoided eg fewer holes in ground ignore reduces pollution if not qualified ignore better for environment ignore more environmentally friendly ignore recycling is easier ignore iron difficult to extract</p> <p>allow less energy needed/uses less fossil fuels</p> <p>ignore cost/cheaper unless qualified eg cheaper just to melt than to extract</p>	(2)

Question Number	Answer	Acceptable answers	Mark
2(a)(i)	<ul style="list-style-type: none"> • carbon (1) • hydrogen (1) 	in either order ignore symbols look for key words but reject carbon dioxide	(2)

Question Number	Answer	Acceptable answers	Mark
2(a)(ii)	(turns) colourless/decolourises/ (orange) colour disappears	loses its colour ignore clear/transparent	(1)

Question Number	Answer	Acceptable answers	Mark
2(b)(i)	C		(1)

Question Number	Answer	Acceptable answers	Mark
2(b)(ii)	A description including one of the following pairs <ul style="list-style-type: none"> • large molecule (1) • (formed from) (many) small molecules/monomers/alkenes (molecules) (1) OR <ul style="list-style-type: none"> • (formed when) (many) small molecules / monomers / alkenes (molecules) (1) • joined together (1) 	long chain(molecule) named alkene named alkene added/linked	(2)

Question Number	Answer	Acceptable answers	Mark
2(b)(iii)	<p>An explanation linking one of the following pairs</p> <ul style="list-style-type: none"> • conserves crude oil / (natural) resource (1) • because do not have to make more (monomer/polymer) (1) <p>OR</p> <ul style="list-style-type: none"> • conserves crude oil ((1) • which is a finite resource (1) <p>OR</p> <ul style="list-style-type: none"> • stops landfill filling up (1) <ul style="list-style-type: none"> • (which happens because) polymers non-biodegradable (1) <p>OR</p> <ul style="list-style-type: none"> • (polymers) are burnt/incinerated (1) • releases carbon dioxide/toxic gas (emissions) conditional on burning/incinerating(1) 	<p>uses less crude oil/ (natural) resources ignore can be reused</p> <p>uses less crude oil non-renewable</p> <p>being sent to landfill taking up space in landfill ignore less waste</p> <p>do not decompose/break down/rot decompose/break down slowly</p> <p>harmful/dangerous ignore bad accept named toxic gas</p> <p>ignore cheaper ignore uses less energy ignore recycling does not pollute atmosphere as much ignore less damage/better for environment</p>	(2)

Question Number	Answer	Acceptable answers	Mark
3(a)	layers/layered		(1)

Question Number	Answer	Acceptable answers	Mark
3(b)(i)	D		(1)

Question Number	Answer	Acceptable answers	Mark
3(b)(ii)	B		(1)

Question Number	Answer	Acceptable answers	Mark
3(c)(i)	an explanation linking <ul style="list-style-type: none"> • (because) colour change / (changes from green to) black (1) • carbon dioxide (formed) (1) 		(2)

Question Number	Answer	Acceptable answers	Mark
3(c)(ii)	an explanation linking the following points <ul style="list-style-type: none"> • copper (carbonate) (1) • because it produces {gas / carbon dioxide} fastest/in shortest time(1) 	took (only) 40 seconds changed colour first/fastest fastest time reacts the fastest second mark dependent on first mark but if no carbonate named can score second mark	(2)

Question Number	Answer	Acceptable answers	Mark
3(c)(iii)	<p>an explanation linking three of the following</p> <ul style="list-style-type: none"> • (heat copper carbonate) in suitable container (which allows gas to be tested) (1) • suitable method of passing/collecting the gas e.g. bubble gas into / use of a delivery tube / collect gas in test tube (1) • limewater (1) • white (ppt)/ cloudy / milky(1) 	<p>marks could be gained from a diagram</p> <p>not just add gas to not blow</p> <p>ignore lighted/glowing splints</p> <p>dependent on correct use of limewater</p>	(3)

Question Number	Answer	Acceptable answers	Mark
4 (a)	C		(1)

Question Number	Answer	Acceptable answers	Mark
4(b)	volcanoes	ignore other responses	(1)

Question Number	Answer	Acceptable answers	Mark
4(c)	<p>a description including two of the following points</p> <ul style="list-style-type: none"> • dissolves in oceans/seas /water (1) • (used to form) skeletons / shells (of marine organisms) (1) • (these) formed sediments (when the organisms died) (which were then compacted) (1) 	<p>oceans/seas/water absorb (carbon dioxide)</p> <p>sedimentary rocks or limestone/chalk</p>	(2)

Question Number	Answer	Acceptable answers	Mark
4(d)	an explanation linking the following points <ul style="list-style-type: none"> • (plants) undergo photosynthesis/absorb carbon dioxide (1) • gives off oxygen / increases oxygen (in atmosphere) (1) 	spelling does not need to be perfect but must be recognisable changes carbon dioxide into oxygen ignore references to breathing	(2)

Question Number	Answer	Acceptable answers	Mark
4(e)	an explanation linking three of <ul style="list-style-type: none"> • water level risen (1) • because (candle) burning uses oxygen (1) • water takes place of oxygen • one fifth of way up jar / only part way as air is 20% oxygen (1) 	water level increased oxygen needed to keep candle lit flame goes out when oxygen used up do not allow oxygen burns	(3)

Question Number	Answer	Acceptable answers	Mark
4(f)	octadecane + oxygen (1) → carbon dioxide + water (1)	allow wax + oxygen → carbon dioxide + water reject air allow correct formulae if words and formulae given ignore formulae	(2)

Question Number	Answer	Acceptable answers	Mark
5(a)	sulfur	allow S allow recognisable spelling not sulfate not sulfide not sulfite	(1)

Question Number	Answer	Acceptable answers	Mark
5(b)	any two of the following <ul style="list-style-type: none"> • damages one of statues / buildings / stonework / limestone/marble/chalk/ iron / steel (1) • damages one of trees/plants/soil (1) • specified water life affected e.g. fish die (1) 	erodes/corrodes/weathers/ decays/ruins/rots/dissolves/ destroys/affects ignore any other rocks ignore deforestation makes lakes acidic	(2)

Question Number	Answer	Acceptable answers	Mark
5 (c)	an explanation linking <ul style="list-style-type: none"> • carbon dioxide has increased (1) with one of the following points <ul style="list-style-type: none"> • (average) temperature has increased /as well/also/too (so there may be a link) (1) OR <ul style="list-style-type: none"> • although (average) temperature change it might be a natural fluctuation (1) OR <ul style="list-style-type: none"> • although (average) temperature change is not necessarily caused by carbon dioxide levels (1) 		(2)

Question Number	Answer	Acceptable answers	Mark
5(d)	A		(1)

Question Number		Indicative Content	Mark
QWC	*5e	<p>An explanation linking some of the following points</p> <p>Fuel A</p> <ul style="list-style-type: none"> • very easy to light • not smoky • gives off least heat • gas so harder to store <p>Fuel B</p> <ul style="list-style-type: none"> • very easy to light • not smoky • doesn't give off most heat • liquid so easy to store <p>Fuel C</p> <ul style="list-style-type: none"> • easy to light, but harder than A or B • little bit of smoke • doesn't give off most heat • liquid so easy to store <p>Fuel D</p> <ul style="list-style-type: none"> • easy to light, but harder than A or B • little bit of smoke • gives off most heat • liquid so easy to store <p>Conclusion (any justified)</p> <ul style="list-style-type: none"> • e.g. B best as although less energy than D easier to ignite and little smoke • e.g. D best although smokier gives more energy 	(6)
Level	0	No rewardable content	
1	1 - 2	<ul style="list-style-type: none"> • a limited explanation e.g. D gives off most heat • the answer communicates ideas using simple language and uses limited scientific terminology • spelling, punctuation and grammar are used with limited accuracy 	
2	3 - 4	<ul style="list-style-type: none"> • a simple explanation with correct comparative statement about at least three properties and two fuels, e.g. D gives off most heat and gives a little smoke but A is easier/very easy to light OR conclusion with statement about two properties and one fuel e.g. B is best because it is very easy to light, and gives no smoke • 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	<ul style="list-style-type: none"> • a detailed explanation with correct comparative statement about three properties and three fuels e.g. A and B are the easiest to light and give off no smoke but give lowest temperature rise and D gives the most heat OR a conclusion with statement about three properties e.g. D is the best fuel because it is quite easy to light and produces biggest temperature rise even though gives off (little) smoke • 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)	A		(1)

Question Number	Answer	Acceptable answers	Mark
6 (b)	calcium carbonate + hydrochloric acid → carbon dioxide + water + calcium chloride	Allow correct formulae	(1)

Question Number		Indicative content	Mark
QWC	*6(c)	<p>an explanation linking some of the following points (could be in diagram)</p> <ul style="list-style-type: none"> • put acid in container • attach power supply/electricity supply • use direct current • test tube inverted over electrode(s) • bubbles seen • one product hydrogen • one product chlorine • bleached litmus • relevant safety precaution 	(6)
Level	0	No rewardable content	
1	1-2	<ul style="list-style-type: none"> • a limited explanation e.g. one correct statement eg pass electricity (through acid) • the answer communicates ideas using simple language and uses limited scientific terminology • spelling, punctuation and grammar are used with limited accuracy 	
2	3-4	<ul style="list-style-type: none"> • a simple explanation e.g pass electricity through the acid and hydrogen or chlorine formed • 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	<ul style="list-style-type: none"> • a detailed explanation.e.g. electricity is passed through the acid, hydrogen and chlorine are formed • eg puts acid in container, uses direct current, puts test tube over electrode to collect chlorine • 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(d)	an explanation linking three of <ul style="list-style-type: none">• test with a lighted splint (1)• hydrogen burns / pop (1)• test with glowing splint(1)• oxygen relights it(1)• how other gas behaves in either test/ states other gas is(1)	In test for oxygen: ignore "light splint and blow flame out" ignore " use recently put out splint" ignore " use blown out splint"	(3)

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