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Mark Scheme (Results)

Summer 2014

Pearson Edexcel GCSE in Chemistry (5CH1F) Paper 01

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Question Number	Answer	Acceptable answers	Mark
1(a)	**D** volcanic activity		**(1)**

Question Number	Answer	Acceptable answers	Mark
1(b)(i)	carbon dioxide	CO_2	**(1)**

Question Number	Answer	Acceptable answers	Mark
1(b)(ii)	carbonates		**(1)**

Question Number	Answer	Acceptable answers	Mark
1(b)(iii)	nitrogen	N_2	**(1)**

Question Number	Answer	Acceptable answers	Mark
1(c)	An explanation linking two of the following • {the Earth / water vapour} cooled (1) • water vapour condensed (1) • formed {oceans / seas} (1)	{rain / clouds} form rivers / lakes etc	**(2)**

Question Number	Answer	Acceptable answers	Mark
1(d)	An explanation linking two of the following • photosynthesis (1) • carbon dioxide decreased / owtte (1) • oxygen increased / owtte (1)	plants take in carbon dioxide and / or release oxygen ignore reference to breathing	**(2)**

(Total for Question 1 = 8 marks)

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

Question Number	Answer	Acceptable answers	Mark
2(b)	Any two of the following • good conductor (of electricity) (1) • flexible (1) • ductile / can be made into (wires) (1)	bendy ignore malleable copper does not react / corrode	**(2)**

Question Number	Answer	Acceptable answers	Mark
2(c)(i)	iron (1) carbon dioxide (1)	carbon monoxide / carbon oxide	**(2)**

Question Number	Answer	Acceptable answers	Mark
2(c)(ii)	loss of oxygen	gain of electrons ignore oxide	**(1)**

Question Number	Answer	Acceptable answers	Mark
2(d)	A description including two of the following • preserves resources / ores (1) • stops **metals** going to landfill (1) • saves energy for extraction of new metal (1) • does not damage the landscape (1)	ignore arguments based on cost alone	**(2)**

(Total for Question 2 = 8 marks)

Question Number	Answer	Acceptable answers	Mark
3(a)	hydrogen (1)		**(1)**

Question Number	Answer	Acceptable answers	Mark
3(b)(i)	Cl_2	Ignore Cl / CL_2 / Cl2 / CL2 / Cl^2	**(1)**

Question Number	Answer	Acceptable answers	Mark
3(b)(ii)	**C** manufacture bleach		**(1)**

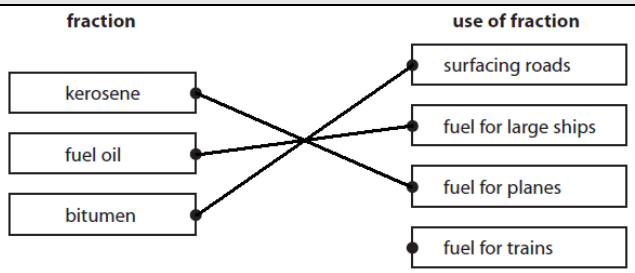
Question Number	Answer	Acceptable answers	Mark
3(b)(iii)	A description linking • (damp) (blue) litmus paper (1) • (reddens then) bleaches (1)	 ignore red (litmus) (damp) {universal indicator / pH} paper white ignore colourless	**(2)**

Question Number	Answer	Acceptable answers	Mark
3(c)	A description including two of • (help) {digest / break down} food (1) • kill bacteria (1) • excess acid causes indigestion (1)	 ignore germs acid reflux	**(2)**

Question Number	Answer	Acceptable answers	Mark
3(d)	magnesium chloride (1) carbon dioxide (1) water (1)	any order ignore formulae hydrogen oxide ignore (water) vapour	**(3)**

(Total for Question 3 = 10 marks)

Question Number	Answer	Acceptable answers	Mark
4(a)	limited amount available / comes from a finite resource / using the crude oil quicker than it is made / it will run out / owtte	ignore cannot be used again / can only be used once	**(1)**

Question Number	Answer	Acceptable answers	Mark
4(b)(i)	 (2)	Any two correct lines (1)	**(2)**

Question Number	Answer	Acceptable answers	Mark
4(b)(ii)	A description including any from the list of physical properties (1) with a difference between the two (1) • boiling points (1) difference (1) • ease of {ignition / burning} (1) difference (1) • viscosity (1) difference (1) • colour (1) difference (1) • numbers of carbon / hydrogen atoms <u>in molecules</u> (1) difference (1)	melting point thickness / runniness ignore sticky size of molecule / chain length	**(2)**

Question Number	Answer	Acceptable answers	Mark
4(c)	An explanation linking • carbon and hydrogen (atoms) (1) • just / only (carbon and hydrogen) (1)	reject mixture for the 1st mark allow H and C for 1st mark reject molecules for the 2nd mark	**(2)**

Question Number	Answer	Acceptable answers	Mark
4(d)(i)	**A** cracking		**(1)**

Question Number	Answer	Acceptable answers	Mark
4(d)(ii)	A description including • alkane - no change / remains orange (1) • alkene – turns colourless (1)	discoloured / decolourised ignore clear	**(2)**

(Total for Question 4 = 10 marks)

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

Question Number	Answer	Acceptable answers	Mark
5(b)	A description including three of the following • expensive to produce hydrogen (1) • {storage / transport} is difficult (1) • can be explosive (when mixed with oxygen and ignited) (1) • lack of fuel stations providing hydrogen (1)	ignore unqualified responses regarding cost harder to store / higher pressure needed ignore dangerous / flammable ignore references to gases escaping ignore references to engine conversions	**(3)**

Question Number	Answer	Acceptable answers	Mark
5(c)	A description including • dissolves in rain / forms acid rain (1) • damages {plants / buildings} / other suitable effect of {acid rain / sulfur dioxide including its toxicity) (1)	ignore references to global warming breathing difficulties reject references to ozone layer	**(2)**

Question Number		Indicative Content	Mark
QWC	***5(d)**	A description including some of the following points • fuel B is the cheapest • fuel A is the most expensive • shows calculated temperature rises • fuel A – 36 ^{o}C, fuel B – 5 ^{o}C, fuel C 24 ^{o}C • fuel A shows biggest temperature rise • fuel B has the lowest rise • fuel B produces smoke which causes problems • fuel A burns completely / clean flame • fuels B and C – incomplete combustion • incomplete combustion forms carbon monoxide (which is toxic) • fuel C does not produce smoke • complete combustion, most energy given out to heat water • incomplete combustion wastes energy • shows calculated energy costs based on temperature rise • for 1 pence of fuel : Fuel A – 12 ^{o}C, fuel B 10 ^{o}C, fuel C 12 ^{o}C • A or C would be the best fuel as more energy efficient than B	**(6)**
Level	**0**	No rewardable content	
1	**1 – 2**	• a limited description e.g. fuel B is the cheapest OR mention of a merit or a demerit of at least one fuel • 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. mention of some merits or demerits of at least two fuels OR comparison of all three fuels using information from one column of the table • 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. mention of some merits and demerits of all three fuels OR a reasoned argument for one fuel being better or worse than the others • The answer communicates ideas clearly and coherently uses a range of scientific terminology accurately • spelling, punctuation and grammar are used with few errors	

(Total for Question 5 = 12 marks)

Question Number	Answer	Acceptable answers	Mark
6(a)(i)	CaO	OCa Reject CAO / cao / CaO_2	**(1)**

Question Number	Answer	Acceptable answers	Mark
6(a)(ii)	**D** thermal decomposition		**(1)**

Question Number	Answer	Acceptable answers	Mark
6(a)(iii)	calcium carbonate → calcium oxide + carbon dioxide (2) allow: calcium carbonate → (1) → calcium oxide + carbon dioxide (1)	allow = ignore heat $CaCO_3$ → (1) → CaO + CO_2 (1) incorrect balancing max 1 mark	**(2)**

Question Number	Answer	Acceptable answers	Mark
6(b)	A description including two of the following • (sediments) fall to bottom of sea / build-up of layers (1) • compacted / squashed / under pressure / cemented (together) (1) • over (long period of) time (1)	ignore any effects of heat ignore layers in other rock types if time is mentioned has to be in the order of millions of years	**(2)**

Question Number		Indicative Content	Mark
QWC	***6(c)**	A description including some of the following points **advantages** • provides jobs • provides essential raw material • boosts local economy **disadvantages** • noisy • dusty / smoke • extra traffic on roads • damages tourist industry • affects quality of life for local people • adverse effect of property values • quarry land cannot be used for farming • destroys original landscape • damages natural habitats	**(6)**
Level	**0**	No rewardable content	
1	**1 - 2**	• a limited description of an advantage or a disadvantage e.g. the quarry provides jobs for local people • 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 of an advantage and a disadvantage OR at least two advantages OR at least two disadvantages e.g. the quarry provides jobs for local people but there's more heavy lorries on the road • 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 of at least two advantages and a disadvantage OR an advantage and at least two disadvantages e.g. advantages include jobs for local people, but disadvantages include it is dusty and noisy and damages the tourist industry • the answer communicates ideas clearly and coherently uses a range of scientific terminology accurately • spelling, punctuation and grammar are used with few errors	

(Total for Question 6 = 12 marks)

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