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# Mark Scheme (Results)

## March 2013

## GCSE Chemistry
## 5CH1F/01

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| Question Number | Answer | Acceptable answers | Mark |
|---|---|---|---|
| **1(a)(i)** | C (78%) | | **(1)** |

| Question Number | Answer | Acceptable answers | Mark |
|---|---|---|---|
| **1(a)(ii)** | oxygen | $O_2$<br>Reject $O^2$, O2, O | **(1)** |

| Question Number | Answer | Acceptable answers | Mark |
|---|---|---|---|
| **1(b)** | An explanation linking any **two** of<br>• {Earth/atmosphere} cooled (1)<br>• water vapour condensed / forms rain / forms clouds / forms precipitation (1)<br>• {seas/ oceans} formed / soaked into ground (1) | | **(2)** |

| Question Number | Answer | Acceptable answers | Mark |
|---|---|---|---|
| **1(c)** | | | **(2)** |

| process | adds carbon dioxide | does not affect amount of carbon dioxide | removes carbon dioxide |
|---|---|---|---|
| burning fossil fuels | (✓) | | |
| volcanic activity | ✓ | | |
| dissolving in the oceans | | | ✓ |

Reject any row with two or more ticks; allow any symbol for tick

| Question Number | Answer | Acceptable answers | Mark |
|---|---|---|---|
| **1(d)** | An explanation linking any **two** of<br>EITHER<br>• **photosynthesis** (1)<br>• which takes in/ absorbs / removes carbon dioxide (1)<br>OR<br>• wood burned / wood decays (1)<br>THERFORE<br>• carbon dioxide increases (1) | Accept $CO_2$ in each case<br><br>Ignore “breathes in carbon dioxide” | **(2)** |

| Question Number | Answer | Acceptable answers | Mark |
|---|---|---|---|
| **2(a)** | B (increases noise) | | **(1)** |

| Question Number | Answer | Acceptable answers | Mark |
|---|---|---|---|
| **2(b)(i)** | An explanation linking the following<br>• break down (of a compound) (1)<br>• heat / high temperature (makes process happen) (1) | break up/ split up [ignore decompose] | **(2)** |

| Question Number | Answer | Acceptable answers | Mark |
|---|---|---|---|
| **2(b)(ii)** | 56 (kg) | Accept 100-44 **if not worked out**<br>if units given must be kg | **(1)** |

| Question Number | Answer | Acceptable answers | Mark |
|---|---|---|---|
| **2(c)(i)** | Marble | | **(1)** |

| Question Number | Answer | Acceptable answers | Mark |
|---|---|---|---|
| **2(c)(ii)** | An explanation linking<br>• heat/high temp (1)<br>• (high) pressure / compressed (1) | Reject if melting | **(2)** |

| Question Number | Answer | Acceptable answers | Mark |
|---|---|---|---|
| **2(c)(iii)** | Igneous | | **(1)** |

| Question Number | Answer | Acceptable answers | Mark |
|---|---|---|---|
| **3(a)** | (good) conductor (of electricity) / flexible / malleable / ductile / unreactive | Allow explanations eg 'allows electricity to pass through'.<br>Copper does not rust is not accepted | **(1)** |

| Question Number | Answer | Acceptable answers | Mark |
|---|---|---|---|
| **3(b)** | D (are stronger) | | **(1)** |

| Question Number | Answer | Acceptable answers | Mark |
|---|---|---|---|
| **3(c)** | An explanation linking two of<br>• unreactive/inert (1)<br>• does not corrode (1)<br>• malleable (1)<br>• ductile (1)<br>• scarce / valuable / expensive (1)<br>• appropriate melting point (1)<br>• (so stays) shiny /attractive (1) | Ignore does not rust | **(2)** |

| Question Number | Answer | Acceptable answers | Mark |
|---|---|---|---|
| **3(d)** | An explanation linking<br>• mixture of a metal (1)<br>• with another metal or carbon (1) | Do not allow combining / bonding / joining etc instead of mixture<br>allow specific examples | **(2)** |

| Question Number | Answer | Acceptable answers | Mark |
|---|---|---|---|
| **3(e)** | iron oxide + carbon monoxide → iron + carbon dioxide<br><br>reactants (1)<br>products (1) | Allow fully balanced symbol equation for 2 | **(2)** |

| Question Number | Answer | Acceptable answers | Mark |
|---|---|---|---|
| **3(f)** | An explanation linking<br>• preserves supplies (1)<br>• as new ore not needed (1)<br>OR<br>• fewer quarries / mines / eyesores (1)<br>• because ore does not have to be dug up (1)<br>OR<br>• iron objects last a long time (1)<br>• so would fill up landfill sites (1)<br>OR<br>• because just has to be melted (1)<br>OR<br>• saves energy (1)<br>• therefore less carbon dioxide released (1) | Ignore references to cost | **(2)** |

| Question Number | Answer | Acceptable answers | Mark |
|---|---|---|---|
| **4(a)(i)** | break down food / (help) digestion | | **(1)** |

| Question Number | Answer | Acceptable answers | Mark |
|---|---|---|---|
| **4(a)(ii)** | D (to neutralise excess acid) | | **(1)** |

| Question Number | Answer | Acceptable answers | Mark |
|---|---|---|---|
| **4(b)** | zinc oxide + sulfuric acid → zinc sulfate + water<br><br>any 3 correct – 1 mark<br>all 4 correct (and no additional substances) – 2 marks | Allow fully correct balanced equation for 2 | **(2)** |

| Question Number | Answer | Acceptable answers | Mark |
|---|---|---|---|
| **4(c)(i)** | A (electrolysis) | | **(1)** |

| Question Number | Answer | Acceptable answers | Mark |
|---|---|---|---|
| **4(c)(ii)** | A description including<br><br>• lighted splint / ignite gas (1)<br>• (squeaky) pop (1) | | **(2)** |

| Question Number | Answer | Acceptable answers | Mark |
|---|---|---|---|
| **4(d)(i)** | An explanation linking<br><br>• chlorine toxic / poisonous (1)<br>• fume cupboard removes gas / OWTTE (1) | ignore harmful etc | **(2)** |

| Question Number | Answer | Acceptable answers | Mark |
|---|---|---|---|
| **4(d)(ii)** | PVC / poly(chloroeth**e**ne) | Polychloroeth**e**ne / polychloreth**e**ne<br><br>reject poly(chloroeth**a**ne) | **(1)** |

| Question Number | Answer | Acceptable answers | Mark |
|---|---|---|---|
| **5(a)** | An explanation linking<br>• (B) contains carbon and hydrogen (1)<br>• only (1) | Ignore references to single or double bonds | **(2)** |

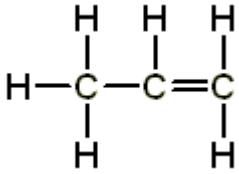
| Question Number | Answer | Acceptable answers | Mark |
|---|---|---|---|
| **5(b)(i)** | D (burns to produce heat energy) | | **(1)** |

| Question Number | Answer | Acceptable answers | Mark |
|---|---|---|---|
| **5(b)(ii)** | octane + oxygen $\longrightarrow$ carbon dioxide + water<br>reactants (1)<br>products (1) | Allow fully balanced symbol equation for 2 | **(2)** |

| Question Number | Answer | Acceptable answers | Mark |
|---|---|---|---|
| **5(b)(iii)** | carbon monoxide | Allow CO<br>Reject Co | **(1)** |

| Question Number | | Indicative Content | Mark |
|---|---|---|---|
| **QWC** | ***5(c)** | A description including some of the following points<br><br>**Fractions** (in order)<br><br>• (gases)<br>• petrol / gasoline<br>• [naphtha]<br>• kerosene<br>• diesel (oil)<br>• (fuel oil)<br>• (bitumen)<br><br>**Uses**<br><br>Many fractions are used as fuel<br>gases / LPG – for camping / domestic cooking<br>petrol – for cars<br>kerosene - for aircraft / domestic heaters<br>diesel oil – for cars and larger vehicles, trains<br>fuel oil – for large ships, power stations<br><br>naphtha – raw material<br>bitumen can be used for road making and roofs / waterproofing<br><br>some fractions can be cracked and alkenes used to make plastics | **(6)** |
| **Level** | **0** | No rewardable content | |
| **1** | **1 - 2** | • a limited description e.g. petrol, used as a fuel in cars<br>• the answer communicates ideas using simple language and uses limited scientific terminology<br>• spelling, punctuation and grammar are used with limited accuracy | |
| **2** | **3 - 4** | • a simple description e.g. most fractions are used as fuels, including petrol in cars, kerosene in aircraft<br>• the answer communicates ideas showing some evidence of clarity and organisation and uses scientific terminology appropriately<br>• spelling, punctuation and grammar are used with some accuracy | |
| **3** | **5 - 6** | • a detailed description e.g. most fractions are used as fuels - petrol in cars, kerosene in aircraft and diesel in lorries – and bitumen is sticky and used on road and roof surfaces<br>• the answer communicates ideas clearly and coherently uses a range of scientific terminology accurately<br>• spelling, punctuation and grammar are used with few errors | |

| Question Number | Answer | Acceptable answers | Mark |
|---|---|---|---|
| **6(a)(i)** | A (ethene can form a polymer) | | **(1)** |

| Question Number | Answer | Acceptable answers | Mark |
|---|---|---|---|
| **6(a)(ii)** | • prop**a**ne [exact spelling](1)<br>• $C_3H_8$ (1)<br>  <br>(1) | Allow methyl group | **(3)** |

| Question Number | Answer | Acceptable answers | Mark |
|---|---|---|---|
| **6(a)(iii)** | description including the following points<br>• (add) bromine (water) (1)<br>• (orange to) colourless (1) | allow decolourised / ignore discoloured, clear | **(2)** |

| Question Number | | Indicative Content | Mark |
|---|---|---|---|
| **QWC** | ***6(b)** | A description including some of the following points<br><br>**recycling – advantages**<br>saves raw materials/crude oil / saves making more plastic<br>landfill sites do not fill up<br>as plastics non-biodegradable<br>less possible damage to animals from discarded waste<br>less energy used (in recycling than in starting from crude oil)<br><br>**recycling – disadvantages**<br>transport to collection area/recycling point uses fuel<br>collection point may cause litter problem/eyesore etc<br>plastics need to be sorted<br><br>**burning – advantages and disadvantages**<br>volume / amount of waste (bags) decreased<br>energy released can be used<br>landfill sites do not fill up<br>as plastics non-biodegradable<br>burning could produce toxic/poisonous fumes /harmful gases<br>burning produces carbon dioxide<br><br>any general comments about reducing pollution, less harm to the environment and economic issues etc can be ignored. | **(6)** |
| **Level** | **0** | No rewardable content | |
| **1** | **1 - 2** | • a limited description e.g. recycling is good as plastics do not rot<br>• the answer communicates ideas using simple language and uses limited scientific terminology<br>• spelling, punctuation and grammar are used with limited accuracy | |
| **2** | **3 - 4** | • a simple description e.g. plastic bags do not rot so burning is good because it leaves little waste<br>• the answer communicates ideas showing some evidence of clarity and organisation and uses scientific terminology appropriately<br>• spelling, punctuation and grammar are used with some accuracy | |
| **3** | **5 - 6** | • a detailed description e.g. recycling is good because it conserves oil but the plastics do have to be sorted first<br>• the answer communicates ideas clearly and coherently uses a range of scientific terminology accurately<br>• spelling, punctuation and grammar are used with few errors | |

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