Question Number					Mark	Answer	Accept	Neutral answer	Do not accept
FT	HT	Sub-section							
7	**1**	(a)			2	melting point decreases (1) density increases (1)			
		(b)			1	potassium	K		sodium
		(c)			2	values from 669–650°C (1) (francium boiling point) below that of caesium /boiling points decrease down the group below 670°C **and** above 650°C / no greater than 20°C below caesium's boiling point (1)			

7

Question Number					Mark	Answer	Accept	Neutral answer	Do not accept
FT	HT	Sub-section							
8	**2**	(a)			2	Iceland (1) positioned on the mid-Atlantic ridge / mid-Atlantic ride passes through Iceland / positioned at a boundary where plates are moving apart / on constructive plate boundary			
		(b)	(i)		1	rocks furthest away (from the plate boundary) are the oldest			
			(ii)		2	new (igneous) rock formed (1) ocean floor moving / ocean floor spreading / rocks moving away from boundary / plates moving apart (1) constructive plate boundary (1) any 2 for (1) each	ocean floor = sea floor floor = rocks	new 'land' formed	plates move towards/past each other

Question Number								
FT	HT	Sub-section			Mark	Answer	Accept	Neutral answer	Do not accept
9	**3**	(a)	(i)		1	circle around **3.0**			
			(ii)		1	incorrect *mass of magnesium* used / incorrect *volume of copper(II) sulfate solution* used / thermometer *out of the reaction* mixture when read any one		too much magnesium added	incorrect thermometer reading
		(b)			3	all points plotted correctly (2) one plotting error only (1) smooth curve of best fit (by eye) (1) *(line must be a single line and line must go to origin)*			points joined by straight lines
		(c)			1	no magnesium added = no temperature rise/ no magnesium added = no reaction			
		(d)			2	0.8(g) (1) consequential from graph temperature stops rising /graph stops rising (1)			

TopLevels.co.uk

Question Number		Mark	Answer
FT	HT		
10	**4**	6	**Indicative content:** Reference to the *causes*, *consequences* and *solutions* of global warming e.g.
		QWC	Causes: burning fossil fuels / named fuels deforestation CO_2 in atmosphere increases CO_2 prevents heat escaping from atmosphere/ CO_2 is a greenhouse gas increased greenhouse effect = global warming/increase in atmospheric temperature Consequences: sea level increasing/ climate change/ extreme weather event/ increase in melting glaciers, sea ice & permafrost Ways of reducing impact: burn less fossil fuel/ reduce deforestation / alternative energy / reduce use of electricity (personal level) carbon capture and storage **5-6 marks** The candidate constructs an articulate, integrated account correctly linking relevant points, such as those in the indicative content, which shows sequential reasoning. The answer fully addresses the question with no irrelevant inclusions or significant omissions. The candidate uses appropriate scientific terminology and accurate spelling, punctuation and grammar. **3-4 marks** The candidate constructs an account correctly linking some relevant points, such as those in the indicative content, showing some reasoning. The answer addresses the question with some omissions. The candidate uses mainly appropriate scientific terminology and some accurate spelling, punctuation and grammar. **1-2 marks** The candidate makes some relevant points, such as those in the indicative content, showing limited reasoning. The answer addresses the question with significant omissions. The candidate uses limited scientific terminology and inaccuracies in spelling, punctuation and grammar. **0 marks** The candidate does not make any attempt or give a relevant answer worthy of credit.

Question Number								
FT	HT	Sub-section			Mark	Answer	Accept	Neutral answer	Do not accept
	5	(a)	(i)		1	**C**	Mg		
			(ii)		2	(good) electrical conductor (good) thermal conductor malleable / bends ductile / can be stretched into wire high mp / high bp high density hard shiny sonorous 　　　　　　　any two for 1 mark each	good conductor (1) thermal = heat dense	strong/durable	
			(iii)	I	1	**D**			
				II	1	brittle and yet has a high mp brittle and yet has a high bp brittle and yet is shiny has both metallic and non-metallic properties found on the boundary between metals and non-metals has intermediate properties 　　　　　　　any one	metalloid	reference to Group 4	
		(b)			1	(left) gaps			

TopLevels.co.uk

Question Number				Mark	Answer	Accept	Neutral answer	Do not accept
FT	HT	Sub-section		Mark	Answer	Accept	Neutral answer	Do not accept
	6	(a)	(i)	1	decreases			
			(ii)	3	2.5 (accept range 2.4-2.6) – 2.2 = **0.3** (1) **0.3/2.5** (1) *consequential marking* 0.3/2.5 × 100 = **12%** (1) *consequential marking*			
		(b)	(i)	3	coal contains **sulfur** (1) sulfur burns forming **sulfur dioxide** (1) SO_2 **reacts with rain** (water) forming (acid rain) (1)		reference to CO_2 and/or oxides of nitrogen	
			(ii)	1	use coal containing less sulfur / use sulfur scrubbers/neutralise the SO_2 before it leaves the power station		Use less coal/ power coal/ trap SO_2	use alternative energy resources

Question Number								
FT	HT	Sub-section			Mark	Answer	Accept	Neutral answer	Do not accept
	7	(a)			3	O_2 appears/increases **and** CO_2 decreases **both** needed (1) plants give out O_2 **and** plants take in CO_2 **both** needed (1) photosynthesis / evolution of green plants (1) CO_2 dissolved in oceans (1) any 3 for (1) each			
		(b)			2	nitrogen: 78-80 oxygen: 20-21 carbon dioxide: 0.03-0.04 all three correct (2) any two correct (1)			

13

Question Number					Mark	Answer	Accept	Neutral answer	Do not accept
FT	HT	Sub-section							
	8	(a)	(i)		2	**A** = sodium carbonate / carbonate **B** = sodium hydroxide / hydroxide **C** = sodium chloride / chloride all correct (2) any one (1)	Na_2CO_3 / CO_3^{2-} NaOH / OH^- NaCl / Cl^-		
			(ii)		1	correct balancing **2** HCl **and** **2** NaCl			
		(b)			1	$Cu(NO_3)_2$	$Cu^{2+}(NO_3^-)_2$		

	Question Number									
FT	HT	Sub-section			Mark	Answer	Accept	Neutral answer	Do not accept
	9	(a)			2	for shorter chains (C_1- C_{16}) demand > supply (1) for longer chains ($C_{17} - C_{28}$) demand < supply (1)			
		(b)			2	(cracking) is the breaking down of large chains/molecules/hydrocarbons into smaller ones (1) reduce unwanted fractions / use up less useful fractions/use up large chains make more useful fractions/ make more smaller chains / make more petrol / make more diesel / makes monomers (for polymerisation) more demand for smaller chains any one for 1 mark	example such as decane broken down to octane and ethene		

Question Number					Mark	Answer	Accept	Neutral answer	Do not accept
FT	HT	Sub-section							
	10	(a)			1	saves energy / reduces amount of electricity consumption (for **melting** aluminium oxide)		reference to electrolysis e.g. reduces amount of electricity for **electrolysis** reference to power/heat	
		(b)			1	(ions) *attracted* to *oppositely* charged electrodes	opposite charges attract		
		(c)			1	correct balancing **2** O^{2-} and **4** e^{-}			

Question Number			
FT	HT	Mark	Answer
	11	6 QWC	**Indicative content:** Reference to *raw materials, reactions* and *products* e.g.

Raw materials:
- **Iron ore:** source of iron
- **Coke:** acts as a fuel/ burns/ forms carbon monoxide/ forms carbon dioxide
- **Limestone:** removes impurities / forms slag
- **Air:** source of oxygen

Reactions:
- coke/C burns forming CO/CO_2
- C/CO reacts with iron oxide forming iron / iron oxide reduced by C/CO
- limestone decomposes forming lime / lime reacts with impurities

Products : molten iron and slag

Correct word and symbol equations will satisfy indicative content.
Labelled diagram can be used to supplement written answer.

5-6 marks
The candidate constructs an articulate, integrated account correctly linking relevant points, such as those in the indicative content, which shows sequential reasoning. The answer fully addresses the question with no irrelevant inclusions or significant omissions. The candidate uses appropriate scientific terminology and accurate spelling, punctuation and grammar.

3-4 marks
The candidate constructs an account correctly linking some relevant points, such as those in the indicative content, showing some reasoning. The answer addresses the question with some omissions. The candidate uses mainly appropriate scientific terminology and some accurate spelling, punctuation and grammar.

1-2 marks
The candidate makes some relevant points, such as those in the indicative content, showing limited reasoning. The answer addresses the question with significant omissions. The candidate uses limited scientific terminology and inaccuracies in spelling, punctuation and grammar.

0 marks
The candidate does not make any attempt or give a relevant answer worthy of credit. |

TopLevels.co.uk