GCSE Mark Scheme - Chemistry 1

Question Number		Sub-section			Mark	Answer	Accept	Neutral answer	Do not accept
FT	HT								
1		(a)			3	A (1) D (1) C (1)			
		(b)			2	NH_3 (1) Mg^{2+} (1)	ammonia magnesium		

Question Number									
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2		(a)			1	calcium and chlorine - both needed		Ca and Cl	chloride
		(b)			1	sodium/magnesium/aluminium	Na/Mg/Al		
		(c)	(i)		1	nitrogen		N	
			(ii)		2	eg hydrogen  carbon  (1)  (1) {atoms need to touch}			
		(d)			1	H_2CO_3	CO_3H_2		

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3		(a)			3	**A** nitrogen (1) **B** oxygen (1) **C** argon (1)	N_2 O_2 Ar	N O	
		(b)	(i)		2	coke (1) slag (1)	carbon/C calcium silicate	coal impurities	
			(ii)		1	oxygen	O_2	O	
			(iii)		1	2 + 3 - both needed (1)			

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4		(a)			1	to use up / to neutralise / remove (all) the acid	to react with **all** the acid		to use **it** all up
		(b)			2	(filter) funnel (1) magnesium oxide (1)	 MgO	filter solid	
		(c)			1	mark credited for process **or** how it is carried out i.e. evaporate **or** leave on window sill / in a warm place / leave for a length of time	 heat / boil	 leave it	
		(d)			1	magnesium sulfate + water	$MgSO_4 + H_2O$		
		(e)			1	$MgCl_2$			

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5		(a)			2	biodegradable (1) reduces land fill problems (1)		 litter / recycled	
		(b)			2	starts to soften at 50°C (1) food would get 'covered' / contaminated with the plastic / plastic would melt on the food / container would lose its shape (1) **or** easy to cut with a knife (1) breaking the container (1)			

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6		(a)			3	pH = 5 (1) weak acid / not very acidic (1) since grapes are eaten (1)	pH = 1 **and** acidic – 1 mark only safe to eat		
		(b)	(i)		3	all five points plotted correctly - 2 marks four points plotted correctly - 1 mark smooth curve - 1 mark	straight lines joining points (since biological data is used)		
			(ii)		1	4.4			
			(iii)		1	55 minutes - from graph ±1	if line not extrapolated accept value in the range 52-60		

Question Number									
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7	1	(a)			3	B (1) m pt lower than room temperature/20°C (1) b pt higher than room temperature/20°C (1)	D m pt < 20 (1) A/C/E b pt > 20 (1)	m pt low / b pt high	
		(b)			3	E (1) good conductor of electricity (1) high m pt/b pt (1)	C high m pt/b pt (1) B good conductor (1)		
		(c)			1	malleable / ductile / high density / good conductor of heat / shiny / (generally) hard / sonorous / magnetic	rust / strong	good conductor / heavy / density	

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8	2	(a)	(i)		1	C_8H_{18}		octane	
			(ii)		1	cracking			
		(b)	(i)		1	goes milky/cloudy/white because carbon dioxide is given off			
			(ii)	I	2	(colourless) liquid / water (1) forms when hydrogen burns (1)			
				II	2	no change (1) no carbon dioxide given off because no carbon present in fuel / hydrogen does not burn to give carbon dioxide (1)			

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9	3	(a)	(i)		1	Na_2SO_4			
			(ii)		1	ammonium fluoride ammonium sulfate magnesium fluoride magnesium sulfate - any two for one mark	NH_4F $(NH_4)_2SO_4$ MgF_2 $MgSO_4$		
		(b)			2	B (1) contains the most fluoride (1)		**Iot** of fluoride	fluorine

Question Number			
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10	4	6	**Indicative content** Many fossil fuels contain impurities including sulfur. The sulfur produces sulfur dioxide during combustion which can eventually produce sulfuric acid resulting in acid rain. Lakes can then become acidic damaging aquatic life. Forests and vegetation gets damaged. Limestone buildings are badly affected. Acid rain also attack metal structures such as bridges. **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.