



Chemistry 1 - Foundation Tier only questions

Question Number		Sub-section		Mark	Answer	Accept	Neutral answer	Do not accept	
FT	HT								
1		(a)	(i)	1	 <i>atoms must be touching</i>				
			(ii)	1	NH ₃	H ₃ N			
		(b)	(i)	1	O ₂ / He / Ne <i>any two</i>	oxygen / helium / neon		O	
			(ii)	1	CO ₂ / CH ₄ / SO ₂ <i>any two</i>	carbon dioxide / methane / sulfur dioxide			
		(c)	(i)	1	1				
			(ii)	1	5				
		(d)	(i)	1	Mg ²⁺ Cl ⁻ <i>both ions needed (including charges)</i>	2Cl ⁻		Cl ₂ ⁻	
			(ii)	1	NaOH	Na ⁺ OH ⁻			

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2		(a)		2	iron ore — source of iron limestone acts as a fuel coke removes impurities All three correct (2) Any one correct (1)			
		(b)		1	carbon + oxygen → carbon dioxide			air coke
		(c)		2	A (1) oxygen removed / oxygen loss (1)	iron oxide is reduced oxygen lost by iron oxide gains both marks	reference to 'oxide'	oxygen lost by iron
		(d)		1	mixture			

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3		(a)		3	all points plotted correctly (2) any 8 points plotted correctly (1) curve of best fitjudgement by eye <i>i.e. smooth continuous single line</i> (1)	$\pm\frac{1}{2}$ square		ruler used in drawing 'curve'
		(b)	(i)	1	5.5 follow through error from graph (ft)			
			(ii)	1	50 \pm 1 ft			
		(c)		2	using a polystyrene cup (1) use a lid / closed top use two polystyrene cups / use thicker polystyrene cup add the acid quickly (1)	beaker traps air form of further insulation around beaker	beaker	
		(d)		1	exothermic			

Question Number		Sub-section		Mark	Answer	Accept	Neutral answer	Do not accept
4		(a)		1	magnesium sulfate + copper	magnesium sulfate <i>solution</i> / copper <i>solid</i> / copper <i>metal</i>		
		(b)		1	displacement			
		(c)		2	equal to 80.6 (1) (in a chemical reaction) atoms are not created or destroyed / (in a chemical reaction) atoms are re-arranged / nothing has entered / left the beaker (1) [Marks linked (unless no box ticked) i.e. second mark cannot be awarded if first is not]		'it is a sealed container'	
		(d)		1	sodium magnesium copper	Na Mg Cu		

Question Number				Mark	Answer	Accept	Neutral answer	Do not accept
5		(a)		1	91	$\pm\frac{1}{2}$ square		
		(b)	(i)	2	(SO ₂ emissions) decreasing / go from 1.3 → 0.4 (1) (SO ₂ emissions) below international targets (1)	idea of 'levelling out'		
			(ii)	2	Any two from: <ul style="list-style-type: none"> • more electricity generated / used • increased fuel consumption / more coal burned / more oil burned / more gas burned • harsh winter / colder weather <p style="text-align: right;"><i>Any two for (1) each</i></p>			
		(c)	(i)	2	pH: increases (1) acidity: decreases (1)	gets weaker		stronger
			(ii)	2	B (1) (pH readings recorded) continuously / remotely / without someone being there / (pH) readings can be stored (1)	over a long period of time	'graph plotted automatically'	

Chemistry 1 - Common questions

Question Number		Sub-section		Mark	Answer	Accept	Neutral answer	Do not accept
6	1	(a)		1	B	Ne / neon		
		(b)		2	<p>D and F (1) both needed <i>either order</i></p> <p>(D and F) are in the same group / (D and F) are both in Group 6 (D and F) both have 6 electrons in their outer shell (1)</p> <p>[Marks linked (unless no letters given)]</p>			
		(c)		2	<p>Set of properties: 2 (1)</p> <p>both metallic and non-metallic properties / metalloid / semi-metal [If referring to specific properties from table it must clearly convey the idea that one (or more) is a metallic property and another is a non-metallic property, e.g. high m.p. and b.p. (like a metal) and brittle (like a non-metal); no credit for a simple list of all properties] (1)</p> <p>[Marks linked (unless no number is given) i.e. second mark cannot be awarded if first is not]</p>	<p>'high m.p., b.p. and shiny BUT brittle'</p>	Reference to Group 4	

Question Number		Sub-section		Mark	Answer	Accept	Neutral answer	Do not accept
7	2	(a)	(i)	1	1			
			(ii)	1	increases			
			(iii)	1	8	C ₈		
		(b)		1	lighter / lower density doesn't break (as easily) / not brittle / flexible	not dangerous when broken	can be recycled strong / durable can be coloured	
		(c)		2	12/60 (1) 12/60 × 100 = 20 % (1) 2 marks for correct answer only (cao)			
		(d)		3	Advantages reducing amount of plastic for disposal (1) conservation of raw materials/crude oil (1) Further (1) mark for development of any link to either advantage, e.g. less plastic going to landfill so fewer sites needed; less plastic litter which is unsightly / harms wildlife; burning plastics produces toxic gases; crude oil is a finite resource; crude oil can be used for other things.			

Question Number		Sub-section		Mark	Answer	Accept	Neutral answer	Do not accept
8	3	(a)		3	copper chloride (1) carbon dioxide (1) sodium hydroxide (1)	CuCl ₂ CO ₂ NaOH		
		(b)		1	2			

Question Number		Mark	Answer	
FT	HT			
9	4	6 QWC	<p>Indicative content:</p> <p>Fluoridation</p> <p>Reasons why:- reduce tooth decay / reduce teeth extractions / reduce number of general anaesthetics</p> <p>Reasons for opposition mass medication / freedom of choice excess fluoride discolours teeth / causes fluorosis / poisonous may also cause brittle bones / IBS / thyroid problems / cancer / bone cancer</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>0 marks The candidate does not make any attempt or give a relevant answer worthy of credit.</p>	<p>Chlorination</p> <p>Reasons why:- kill bacteria/ sterilisation</p> <p>Reasons for no opposition makes water safe to drink / couldn't drink the water otherwise not added for medical reasons</p>