

Chemistry 1 - Common questions

Question Number		Sub-section		Mark	Answer	Accept	Neutral answer	Do not accept
7	1	(a)		1	B and F (both needed)			
		(b)		1	D			
		(c)	(i)	2	it is a semi metal / metalloid / shows properties of both metal and non-metal (1) must give example of one property of a metal and one of non-metal e.g. conducts electricity but low density etc. (1)	idea of conflicting properties	A	
			(ii)	1	D and E (both needed)			
		(d)	(i)	2	310 – 250 (1) 540 / 60 = 9 g/cm ³ (1) cao (2)			
			(ii)	2	measurements are inaccurate / not precise / incorrect credit (1) for basic idea and additional (1) for sensible reason e.g. measuring cylinder not precise enough, only measures to nearest 10cm ³ (2) accept any other sensible answers e.g. sample is impure / oxidised or volume (liquid or solid) changes with temperature		human error	

Question Number		Sub-section			Mark	Answer	Accept	Neutral answer	Do not accept
8	2	(a)	(i)		1	battery acid			
			(ii)		1	blood			
			(iii)		1	pure water			
		(b)			3	A copper carbonate (1) B copper oxide (1) C sodium hydroxide (1)	CuCO ₃ CuO NaOH		

Question Number		Sub-section			Mark	Answer	Accept	Neutral answer	Do not accept
FT	HT								
9	3				3	nanosilver has antibacterial / antiviral / antifungal properties / kills germs (1) could be absorbed through skin / breathed in (1) long term effects unknown (1)	toxic could be released into environment		can cause ...

Question Number		
FT	HT	
10	4	<p>Indicative content:</p> <p>copper – good conductor of electricity = electrical wiring; good conductor of heat = saucepan bases; malleable = water pipes; ductile = electrical wiring; attractive colour and lustre = jewellery</p> <p>titanium – hard and strong = hip replacements and rotor blades; low density = rotor blades; resistant to corrosion = rotor blades / hip replacements / pipes in chemical industry; high melting point = rotor blades.</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>

Chemistry 1 - Higher Tier only questions

Question Number		Sub-section			Mark	Answer	Accept	Neutral answer	Do not accept
FT	HT								
	5	(a)			3	calcium, oxygen and hydrogen (1) Na ₂ CO ₃ (1) Ca(NO ₃) ₂ (1)			
		(b)			1	H ₂ C ₂ O ₄	symbols in any order		

Question Number		Sub-section			Mark	Answer	Accept	Neutral answer	Do not accept
FT	HT								
	6	(a)			1	melting point increases (down group)			
		(b)			1	value between -248 and -187			
		(c)			1	all boiling points are below 20°C / below room temperature	all boiling points are negative values / below 0°C	low boiling points	
		(d)			1	unreactive / inert / not flammable		any property from table non-toxic	
		(e)			1	2 3 2	other correct multiples		

Question Number		Sub-section			Mark	Answer	Accept	Neutral answer	Do not accept
FT	HT								
	7	(a)			3	<p>coal contains sulfur impurities (1)</p> <p>(impurities burn to produce sulfur dioxide) which dissolves in rainwater to produce acid rain (1)</p> <p>acid rain kills fish / trees / erodes limestone statues or buildings / causes metals to rust quicker (1)</p>		kills marine life	ozone layer global warming
		(b)	(i)		2	<p>as the amount of coal burnt increases the emission of sulfur dioxide decreases / more coal used as time goes on but less sulfur dioxide released (1)</p> <p>would expect more sulfur dioxide to be released as more coal is burnt (1)</p>			
			(ii)		1	<p>(introduction of techniques to remove sulfur dioxide from smoke) e.g. sulfur scrubbing coal burnt has lower sulfur content</p>	sulfur dioxide neutralised / reacted with limestone	new technology	carbon capture and storage

Question Number		Sub-section		Mark	Answer	Accept	Neutral answer	Do not accept
	8	(a)		1	a compound containing hydrogen and carbon only			mixture
		(b)		1	each fraction collected across a range of temperatures / several compounds have similar boiling points		melting points	
		(c)	(i)	1	(catalytic) cracking			
			(ii)	1	polymerisation			
		(d)		2	double bond breaks / turns in to single bond (1) molecules join together to form (long) chains (1)			
		(e)		1	non-biodegradable / increased use of landfill / depletion of raw materials produce toxic / harmful gases when burned	can harm wildlife	'harmful' – unless linked to burning	

Question Number		Sub-section		Mark	Answer	Accept	Neutral answer	Do not accept
FT	HT							
	9	(a)		1	0.65			
		(b)		1	the greater the current, the more hydrogen produced			
		(c)		2	difference to mean = 0.1 (1) $(0.1 \div 1.3) \times 100 = 7.7\%$ (1) cao (2)			
		(d)		2	2, 2 (1) 2, 4 (1)			
		(e)		2	must clearly imply an opinion if yes – award (1) each for up to two advantages if no – award (1) each for up to two disadvantages advantages = doesn't produce carbon dioxide / doesn't contribute to global warming / water is only product / readily available / renewable disadvantages = explosive / storage issues / availability / extraction costs (need for electricity)	don't know – (1) each for one advantage and one disadvantage (2) if opinion given and clearly states that one advantage outweighs one disadvantage (or vice versa)		

Question Number		Answer
FT	HT	
	10	<p>Indicative content: definition of electrolysis i.e. use of electricity to split compounds; anode is positive electrode; cathode is negative electrode; electrolyte is substance being broken down; electrolyte conducts electricity; needs to be molten for ions to move freely; positive aluminium ions attracted to cathode where they gain electrons to form aluminium atoms; negative oxide ions attracted to anode where they lose electrons to form oxygen gas; electrode equations</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>