SCIENCE –CHEMISTRY 1 – SPEC A (NEW)

Foundation only questions – January 2012

Question Number									
FT	**HT**	**Sub-section**			**Mark**	**Answer**	**Accept**	**Neutral answer**	**Do not accept**
1		(a)			1	aluminium and oxygen (both needed)		Al and O	
		(b)	(i)		1	galena	PbS lead sulfide		
			(ii)		1	cassiterite	SnO_2 tin oxide		
		(c)			1	found uncombined / on its own	native / found as element		
		(d)	(i)		1	2			
			(ii)		1	5			
		(e)	(i)		1	iron oxide	Fe_2O_3	the oxide	
			(ii)		1	losing / removal of oxygen	gain of electrons		

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2		(a)			1	helium	He		
		(b)			1	oxygen	O_2	O	
		(c)			1	carbon dioxide	CO_2		CO
		(d)			2	carbon dioxide (1) water vapour (1)	CO_2 H_2O		CO
		(e)			1	oxygen	O_2	O	

Question Number									
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3		(a)	(i)		1	4			
			(ii)		1	3			
		(b)			1	fewer decayed / filled / missing teeth in Town B / fluoridated area	converse		
		(c)			2	only two areas studied / insufficient evidence (1) unaware of other factors that may differ between two areas (1) only 5 year age range studied (1) - any 2 for (1) each	only looked at children		

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4		(a)	(i)		1	millions			
			(ii)		1	hydrocarbons			
		(b)	(i)		2	2.9 + 21.0 + 8.6 + 0.6 + 3.7 + 1.2 = 38 (1) 42 – 38 = 4(.0) (1) correct answer only (2)	consequential for second mark		
			(ii)		2	21.0 ÷ 42.0 (1) ×100 = 50% (1) correct answer only (2)	0.5% (1)		

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5		(a)	(i)		1	☐ ☐ ✓ ☐ tick in third box	any method of identifying correct order		
			(ii)		1	zinc can displace iron (from its oxide) but copper can't	correct reason based on prior knowledge		
		(b)			1	copper oxide + carbon → carbon dioxide + copper (1)	carbon monoxide		carbon oxide
		(c)	(i)		2	does not react (with water) (1) malleable (1) non toxic (1) - any 2 for (1) each	does not corrode can be bent	does not rust ductile	
			(ii)		1	electrical wiring / coins / jewellery / ornaments / saucepans			

Question Number									
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6		(a)			1	continents have moved / drifted (apart)	continents were once joined	plate tectonics	
		(b)	(i)		3	fit together like jigsaw / complimentary (1) similar rocks (1) similar fossils (1)		shapes are the same	similar plants / animals
			(ii)		1	couldn't explain how continents moved		not enough evidence	

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Common questions – January 2012

Question Number									
FT	**HT**	**Sub-section**			**Mark**	**Answer**	**Accept**	**Neutral answer**	**Do not accept**
7	1	(a)	(i)		1	metals – A, C **and** F non-metals – D **and** E **all** must be correct		B (either as metal or non metal)	
			(ii)	I	1	B			
				II	1	Group = 4 Period = 3 **both** needed, consequential to answer in I			
		(b)	(i)		2	bromine – liquid (1) iodine – solid (1)			
			(ii)		2	melting point above 114 (1) boiling point above 184 (1) very slow (or no) reaction with sodium (1) - any 2 for (1) each	higher melting point / boiling point than iodine		

Question Number									
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8	2	(a)	(i)	I	1	1			
				II	1	25 (cm^3)	range 24-26		
			(ii)	I	1	green			blue green
				II	1	more precise / continuous measurements / graph produced automatically		more accurate	
		(b)	(i)		3	(add excess) copper oxide to (dilute) sulfuric acid (1) filter to remove excess (1) heat until half volume remains / leave to crystallise (1)	excess could be implied by second marking point		evaporate / boil to dryness

Question Number		
FT	**HT**	
9	3	**Indicative content**: elements originally arranged according to atomic masses, now arranged according to atomic number; **differences** such as gaps in original table, more than one element in some boxes, no noble gases, no transition metal block; **similarities** such as still arranged in groups and periods, 8 groups, certain elements in same group as today. **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**
10	4	(a)			3	A = hydrogen B = oxygen **both** needed (1) oxygen relights glowing splint (1) hydrogen ‘pop’ with lighted splint (1)	H_2 O_2 could be consequential if A/B incorrectly identified	H O	
		(b)			1	does not contribute to greenhouse effect / global warming / does not produce carbon dioxide / water is only product of combustion / does not cause acid rain	renewable	more environmentally friendly	