

IGCSE Chemistry 4437 / 2F

Mark Scheme (Final)

November 2007

IGCSE

IGCSE Chemistry (4437/2F)

Question Number	Question		
1	(a)		
	Acceptable Answers	Reject	Mark
	8		
	Notes		(1)

Question Number	Question		
1	(b)		
	Acceptable Answers	Reject	Mark
	6		
	Notes		(1)

Question Number	Question		
1	(c)		
	Acceptable Answers	Reject	Mark
	Si		
	Notes		(1)

Question Number	Question		
1	(d)		
	Acceptable Answers	Reject	Mark
	N		
	Notes		(1)

Question Number	Question		
1	(e)		
	Acceptable Answers	Reject	Mark
	6		
	Notes		(1)

Total 5 marks

Question Number	Question		
2	(a)		
	Acceptable Answers	Reject	Mark
	Protons / electrons		
	Notes		(1)

Question Number	Question		
2	(b)		
	Acceptable Answers	Reject	Mark
	Neutrons		
	Notes		(1)

Question Number	Question		
2	(c)		
	Acceptable Answers	Reject	Mark
	Elements		
	Notes		(1)

Question Number	Question		
2	(d)		
	Acceptable Answers	Reject	Mark
	Compounds		
	Notes		(1)

Question Number	Question		
2	(e)		
	Acceptable Answers	Reject	Mark
	Electrons		
	Notes		(1)

Question Number	Question		
2	(f)		
	Acceptable Answers	Reject	Mark
	Carbon		
	Notes		(1)

Total 6 marks

Question Number	Question		
3	(a)		
	Acceptable Answers	Reject	Mark
	s l aq g		
	Notes 4 correct = 2, 3/2 correct = 1 and 1/0 correct = 0.		(2)

Question Number	Question		
3	(b)		
	Acceptable Answers	Reject	Mark
	<ul style="list-style-type: none"> Fizzing/effervescence/bubbles Moves/darts about Gets smaller /Disappears Floats 	Reference to flames. Reject 'dissolves'	
	Notes Max 2.		(2)

Question Number	Question		
3	(c)		
	Acceptable Answers	Reject	Mark
	(add) red litmus/universal indicator turns blue. Allow 'purple' for UI		
	Notes		(2)

Total 6 marks

Question Number	Question		
4	(a)		
	Acceptable Answers	Reject	Mark
	brown / red-brown/ orange-brown/ foxy brown Notes	Rusty Orange Red	(1)

Question Number	Question		
4	(b)		
	Acceptable Answers	Reject	Mark
	air / oxygen water/ moisture/ dampness Notes		(2)

Question Number	Question		
4	©		
	Acceptable Answers	Reject	Mark
	iron (III) oxide accept iron oxide Notes Ignore reference to hydrated	ignore oxidation state	(1)

Question Number	Question		
4	(d)		
	Acceptable Answers	Reject	Mark
	oxidation (3 rd box) Notes		(1)

Question Number	Question		
4	(e)		
	Acceptable Answers	Reject	Mark
	Galvanising Notes		(1)

Question Number	Question		
4	(f)		
	Acceptable Answers	Reject	Mark
	(cover with) oil / grease / paint / plastic		
	Notes		(1)

Total 7 marks

Question Number	Question		
5	(a)		
	Acceptable Answers	Reject	Mark
	hydrochloric acid	(not hydrogen chloride)	
	Notes		(1)

Question Number	Question		
5	(b)		
	Acceptable Answers	Reject	Mark
	effervescence / fizzing / bubbles / solid disappears or dissolves		
	Notes		(1)

Question Number	Question		
5	(c)		
	Acceptable Answers	Reject	Mark
	limewater cloudy / milky / white precipitate		
	Notes		(2)

Question Number	Question	
5	(d)	
	Acceptable Answers	Reject
	fish harmed/killed stonework eaten away/ OWTTE iron rusts (more quickly) plants killed Notes Max 2	
		(2)

Total 6 marks

Question Number	Question	
6	(a)	
	Acceptable Answers	Reject
	$ \begin{array}{c} \text{H} \quad \text{H} \\ \quad \\ \text{H}-\text{C}-\text{C}-\text{H} \\ \quad \\ \text{H} \quad \text{H} \end{array} $ Notes Ignore bond angles	
		(1)

Question Number	Question	
6	(b)	
	Acceptable Answers	Reject
	C_3H_8 Notes	
		(1)

Question Number	Question	
6	(c)	
	Acceptable Answers	Reject
	$\text{C}_n\text{H}_{2n+2}$ (2 nd option) Notes	
		(1)

Question Number	Question	
6	(d)	
	Acceptable Answers	Reject
	butane + oxygen → carbon dioxide + water	
	Notes (reactants = 1, products = 1)	
		(2)

Total 5 marks

Question Number	Question	
7	(a)	
	Acceptable Answers	Reject
	(i) iron oxide (III) accept iron oxide/ haematite / Fe_2O_3	NOT iron ore
	(ii) coke / carbon / C (not coal)	
	(iii) limestone / calcium carbonate / CaCO_3	NOT lime
	Notes marks (i) - (iii) can be awarded in any order	
	(iv) slag / calcium silicate / CaSiO_3	
	(v) iron / Fe	
	Notes award 1 if (iv) and (v) are correct but in wrong order	Iron (II) or iron (III)
		(1)
		(1)
		(1)
		(1)
		(1)

Question Number	Question	
7	(b)	
	Acceptable Answers	Reject
	(i) 1	
	(ii) carbon dioxide loses oxygen/ oxidation number of carbon decreases	
	Notes	
		(1)
		(1)
		(1)

Question Number	Question		
7	(c)		
	Acceptable Answers	Reject	Mark
	toxic / poisonous/ correct effect on blood		
	Notes		(1)

Question Number	Question		
7	(d)		
	Acceptable Answers	Reject	Mark
	too reactive / higher than carbon in reactivity series/ very reactive		
	Notes		(1)

Total 10 marks

Question Number	Question		
8	(a)		
	Acceptable Answers	Reject	Mark
	(i) C / F		(1)
	(ii) A and B		(1)
	(iii) E		(1)
	Notes		

Question Number	Question		
9	(b)		
	Acceptable Answers	Reject	Mark
	(i) helium / carbon / nitrogen / oxygen / neon / magnesium / silicon / sulphur / calcium		(1)
	(ii) silicon		(1)
	(iii) hydrogen		(1)
	Notes Max penalty 1 if give symbols for all 3 rather than names		

Question Number	Question		
9	(c)		
	Acceptable Answers	Reject	Mark
	7		
	Notes		(1)

Question Number	Question		
9	(d)		
	Acceptable Answers	Reject	Mark
	(i) full / complete ignore saturated		(1)
	(ii) unreactive/inert/do not undergo reactions		(1)
	Notes		

Total 10 marks

Question Number	Question		
10	(a)		
	Acceptable Answers	Reject	Mark
	zinc is less reactive than magnesium Magnesium is more reactive than Zinc Notes Or correct reference to positions in reactivity series	<u>I</u> t is more reactive	(1)

Question Number	Question		
10	(b)		
	Acceptable Answers	Reject	
	(i) $\text{Fe} + \text{CuSO}_4 \rightarrow \text{FeSO}_4 + \text{Cu}$ reagents products Notes incorrect balancing = -1 be generous with cases (ii) (dark) grey (1) to pink-brown (1) blue (1) to green (1) Notes Ignore additional information		Mark (1) (1) (2) (2)

Question Number	Question		
10	(c)		
	Acceptable Answers	Reject	
	hydrogen more reactive than copper hydrogen less reactive than iron Notes Hydrogen between Fe + Cu for both marks	Iron(II) or Copper (II)	Mark (1) (1)

Total 9 marks

Question Number	Question		
11	(a)		
	Acceptable Answers	Reject	
	(i) shared electron pair all other electrons correct (ignore inner shells even if wrong) (ii) bottom box crossed Notes		Mark (1) (1) (1)

Question Number	Question		
11	(b)		
	Acceptable Answers	Reject	
	same number of electrons / same electronic configurations 'Same protons' negates Notes		Mark (1)

Question Number	Question		
11	(c)		
	Acceptable Answers	Reject	Mark
	add sodium hydroxide (solution)/ammonia solution/ ammonium hydroxide green ppt/solid/suspension Orange/brown/orange-brown/foxy brown/rusty brown/red-brown ppt/ solid/suspension Notes If miss out ppt then give 1 mark for 2 correct colours result marks only given if test correct	Powder/crystals/bits Orange/rusty/red	(1) (1) (1)

Total 7 marks

Paper total 75 marks