

# IGCSE Double Award Science (Chemistry) 4437/2F

## Mark Scheme (Results)

November 2008

IGCSE

## IGCSE Double Award Science - Chemistry (4437/2F)

The following acronyms are used

**owtte** or words to that effect

**ecf** error carried forward

**dop** dependent on previous

**nwn** no working necessary

Question Number	Correct Answer	Notes	Mark
1 (a)	Lithium/Li		(1)

Question Number	Correct Answer	Notes	Mark
1 (b)	Argon/Ar		(1)

Question Number	Correct Answer	Notes	Mark
1 (c)	Name or symbol of any element in group 1 / hydrogen / H		(1)

Question Number	Correct Answer	Notes	Mark
1 (d)	Names or symbols of two elements in the same group (1 to 0)		(1)

Question Number	Correct Answer	Notes	Mark
1 (e)	Name or symbol of any element in Group 1 or 2, excluding Be		(1)

(Total 5 marks)

Question Number	Correct Answer	Notes	Mark
2 (a) (i)	neutron		(1)

Question Number	Correct Answer	Notes	Mark
2 (a) (ii)	electron		(1)

Question Number	Correct Answer	Notes	Mark
2 (a) (iii)	electron		(1)

Question Number	Correct Answer	Notes	Mark
2 (b) (i)	isotopes		(1)

Question Number	Correct Answer	Notes	Mark
2 (b) (ii)	3 3 3 4	last two may be either way round	1 1 1 1 (4)

(Total 8 marks)

Question Number	Correct Answer	Notes	Mark
3 (a)	white (1) to blue (1) hydrated (accept 'hydrous') copper ((II)) sulphate	Ignore pale/dark	2 1 (3)

Question Number	Correct Answer	Notes	Mark
3 (b)	white (accept grey) (1) Dehydration / becomes anhydrous		1 1 (2)

(Total 5 marks)

Question Number	Correct Answer	Notes	Mark
4 (a)	Name of metal Use of metal Property on which that use depends  aluminium aircraft bodies low density/resists corrosion  copper water pipes resists corrosion  iron railway tracks strong  1 mark per correct use 1 mark per correct property for use chosen - property is cq on the use.		(6)

Question Number	Correct Answer	Notes	Mark
4 (b) (i)	reacts with oxygen/forms carbon dioxide		(1)

Question Number	Correct Answer	Notes	Mark
4 (b) (ii)	bottom box		(1)

Question Number	Correct Answer	Notes	Mark
4 (c) (i)	carbon dioxide + iron (either order)		(1)

Question Number	Correct Answer	Notes	Mark
4 (c) (ii)	(aluminium) too reactive/more reactive than carbon		(1)

(Total 10 marks)

Question Number	Correct Answer	Notes	Mark
5 (a)	allotropes carbon		1 1 (2)

Question Number	Correct Answer	Notes	Mark
5 (b) (i)	middle box middle box (dep on M1)		1 1 (2)

Question Number	Correct Answer	Notes	Mark
5 (b) (ii)	5		(1)

Question Number	Correct Answer	Notes	Mark
5 (b) (iii)	low (only) weak molecules (only)	All INDEP	1 1 1 (3)

(Total 8 marks)

Question Number	Correct Answer	Notes	Mark
6 (a) (i)	C/ethene/C <sub>2</sub> H <sub>4</sub> /E/propene/C <sub>3</sub> H <sub>6</sub>		(1)

Question Number	Correct Answer	Notes	Mark
6 (a) (ii)	C <sub>2</sub> H <sub>4</sub>		(1)

Question Number	Correct Answer	Notes	Mark
6 (a) (iii)	C <sub>n</sub> H <sub>2n+2</sub>		(1)

Question Number	Correct Answer	Notes	Mark
6 (b) (i)	Correct displayed formula = 2 if incorrect, then give 1 mark if structure drawn has 4 carbon atoms OR if it is a saturated hydrocarbon with correct valencies of all atoms.		(2)

Question Number	Correct Answer	Notes	Mark
6 (b) (ii)	no change/remains orange or brown/no reaction butane has no C=C / double bond / is saturated		1 1 (2)

Question Number	Correct Answer	Notes	Mark
6 (c) (i)	film		(1)

Question Number	Correct Answer	Notes	Mark
6 (c) (ii)	flexible/does not conduct (electricity)	Allow poor conductor of electricity	(1)

(Total 9 marks)



Question Number	Correct Answer	Notes	Mark
7 (a) (i)	hydrogen peroxide → water + oxygen		(1)

Question Number	Correct Answer	Notes	Mark
7 (a) (ii)	catalyst		(1)

Question Number	Correct Answer	Notes	Mark
7 (b)	over water / displacement of air with downward delivery / upward displacement of air. Could be shown on a diagram.	Accept "through water".	(1)

Question Number	Correct Answer	Notes	Mark
7 (c)	relights a glowing splint	Reject "glows more brightly"	(1)

Question Number	Correct Answer	Notes	Mark
7 (d) (i)	Red (ignore pale/dark), crimson / scarlet	Reject references to orange / yellow / pink	(1)

Question Number	Correct Answer	Notes	Mark
7 (d) (ii)	electron transfer from lithium to oxygen Li atoms each lose one electron and O atom gains two electrons	Covalent / sharing scores zero	1 1 1 (3)

Question Number	Correct Answer	Notes	Mark
7 (d) (iii)	Li <sup>+</sup> O <sup>2-</sup>	Both correct but reversed scores 1	1 1 (2)

(Total 10 marks)

Question Number	Correct Answer	Notes	Mark
8 (a)	Brown / red brown (reject "light", accept "dark")	Reject red alone or reference to orange	1
	Grey (reject "light", accept "dark")/ black	Reject purple or violet	1 (2)

Question Number	Correct Answer	Notes	Mark
8 (b) (i)	diffusion		(1)

Question Number	Correct Answer	Notes	Mark
8 (b) (ii)	$\text{Br}_2(\text{l}) \rightarrow \text{Br}_2(\text{g})$ <i>Reactants = 1, products = 1</i>		(2)

Question Number	Correct Answer	Notes	Mark
8 (b) (iii)	moving (faster)		1
	further apart owtte		1 (2)

Question Number	Correct Answer	Notes	Mark
8 (c) (i)	bromine + hydrogen $\rightarrow$ hydrogen bromide	Ignore "gas"	(1)

Question Number	Correct Answer	Notes	Mark
8 (c) (ii)	hydrobromic (acid)		(1)

(Total 9 marks)

Question Number	Correct Answer	Notes	Mark
9 (a) (i)	neutralisation	Accept "exothermic"	(1)

Question Number	Correct Answer	Notes	Mark
9 (a) (ii)	$\text{KOH} + \text{HNO}_3 \rightarrow \text{KNO}_3 + \text{H}_2\text{O}$ <i>Reactants = 1, products = 1</i>	Correct formulae with incorrect balancing = 1 Ignore state symbols	(2)

Question Number	Correct Answer	Notes	Mark
9 (b) (i)	burette		(1)

Question Number	Correct Answer	Notes	Mark
9 (b) (ii)	pink / red (reject purple) colourless	Award 1 mark for correct colours in wrong order One colour on its own is zero	1
			1
			(2)

Question Number	Correct Answer	Notes	Mark
9 (c)	<p>Same volumes without indicator Heat/warm/boil/leave(in a warm) to evaporate water Cool (not given if not heated) filter off crystals dry between filter paper/ in (warm) oven (not leave to dry) <b>if no attempt at M2, max 1</b> <b>if heat to dryness in M2, max 2</b></p> <p>OR</p> <p>Boil titration mixture with charcoal and filter Heat/warm/boil/leave(in a warm) to evaporate water Cool (not given if not heated) filter off crystals dry between filter paper/ in (warm) oven (not leave to dry) <b>if no attempt at M2, max 1</b> <b>if heat to dryness in M2, max 2</b></p>		1
			1
			1
			1
			1
	(5)		

(Total 11 marks)