

# IGCSE Chemistry 4335/1F

## Mark Scheme (Results)

### November 2008

IGCSE

## IGCSE Chemistry (4335/1F)

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)	Iron + steam → iron (III) oxide + hydrogen	Allow water	(1)

Question Number	Correct Answer	Notes	Mark
3 (b) (i)	Cool / condense		(1)

Question Number	Correct Answer	Notes	Mark
3 (b) (ii)	ref to boiling point (1) 100 (°C) (1) OR ref to freezing point (1) 0(°C)	Allow melting point	(2)

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

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

(Total 9 marks)

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

Question Number	Correct Answer	Notes	Mark
4 (b) (i)	label to anode		(1)

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

Question Number	Correct Answer	Notes	Mark
4 (b) (iii)	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 11 marks)

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

Question Number	Correct Answer	Notes	Mark
5 (b) (i)	oxygen / O <sub>2</sub>		(1)

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

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

Question Number	Correct Answer	Notes	Mark
5 (b) (iv)	linear structure with three atoms C in middle and O either side	Ignore dots and crosses	(1)

Question Number	Correct Answer	Notes	Mark
5 (b) (v)	low (only) weak molecules (only) small / low	All INDEP	1 1 1 1 (4)

(Total 11 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 (a) (iv)	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) (v)	C/ethene/C <sub>2</sub> H <sub>4</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		1
	butane has no C=C / double bond / is saturated		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 11 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)	Br <sub>2</sub> (l) → Br <sub>2</sub> (g) <i>Reactants = 1, products = 1</i>		(2)

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

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

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

Question Number	Correct Answer	Notes	Mark
8 (d) (i)	melt/molten/fused (lead (II) bromide)	Allow "dissolve in water" not just heat or add water	(1)

Question Number	Correct Answer	Notes	Mark
8 (d) (ii)	(A) electrons	If ions named in wrong order, award 1 mark for both. If "ions" omitted <b>twice</b> , max 1 for B and C. If B and C "positive ions" and "negative ions" - 1 mark.	1
	(B) lead(II) ions / Pb <sup>2+</sup>		1
	(C) bromide ions / Br <sup>-</sup>		1 (3)

Question Number	Correct Answer	Notes	Mark
8 (e)	Gain of electrons (by $\text{Pb}^{2+}$ )		(1)

(Total 14 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)	Same volumes without indicator		1
	Heat/warm/boil/leave(in a warm) to evaporate water		1
	Cool (not given if not heated)		1
	filter off crystals		1
	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>		1
OR			
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>			(5)

(Total 11 marks)

Question Number	Correct Answer	Notes	Mark
10 (a) (i)	$C_2H_4 + H_2O \rightarrow CH_3CH_2OH$	Accept $C_2H_5OH$	(1)

Question Number	Correct Answer	Notes	Mark
10 (a) (ii)	(concentrated) phosphoric acid	Reject "dilute"	(1)

Question Number	Correct Answer	Notes	Mark
10 (b)	sugar / sucrose / glucose	Additional wrong reagents negate sugar mark	1
	yeast		1
	two from		2
	dissolve in water absence of air temperature in range 20 - 40 °C		Reject "heat" accept "warm"
	<i>Any two conditions for 1 mark each</i>		(4)

Question Number	Correct Answer	Notes	Mark
10 (c) (i)	$CH_3CH_2OH(l) + CH_3COOH(l) \rightarrow CH_3COOCH_2CH_3(l) + H_2O(l)$ Reactants = 1, products = 1, state symbols (dependent on correct formulae) = 1	Accept $C_2H_5$ in place of $CH_2CH_3$	(3)

Question Number	Correct Answer	Notes	Mark
10 (c) (ii)	pleasant/fruity/glue smell / oily drops	Not just "smell"	(1)

(Total 10 marks)