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Mark Scheme (Results)
November 2010

IGCSE

IGCSE Chemistry (4335) Paper 1F

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IGCSE CHEMISTRY 4335/1F – NOVEMBER 2010

SECTION A

Question			Mark	Acceptable answers	Notes	Total
1	**a**		M1	2		**1**
	b		M1	argon / Ar / calcium / Ca		**1**
	c		M1	oxygen / sulphur / selenium / tellurium / polonium		**1**
	d		M1	He / Ne / Ar / Kr / Xe / Rn		**1**
	e		M1	tin / Sn		**1**

Question			Mark	Acceptable answers	Notes	Total
2	**a**		M1	neutrons		**1**
	b		M1	nucleus		**1**
	c		M1	negative		**1**
	d		M1	protons and neutrons	Accept in either order	**1**
	e		M1	neutrons		**1**
	f		M1	identical		**1**

Question			Mark	Acceptable answers	Notes	Total
3	**a**	**i**	M1	carbon + oxygen → carbon dioxide		**1**
		ii	M1	carbon dioxide		**1**
	b	**i**	M1	cross in box 3		**1**
			M2	cross in box 5		**1**
		ii	M1	painting / galvanising / coating with zinc		**1**
	c		M1 M2	aircraft bodies / cooking pans / overhead power cables	Uses: Any two for 1 mark each	**2**
			M3 M4	aircraft bodies → low density cooking pans → good conductor of heat overhead power cables → good conductor of electricity	Properties: Any two for 1 mark each Property must match use	**2**

Question			Mark	Acceptable answers	Notes	Total
4	**a**		M1	cross in box 1		**1**
	b	**i**	M1	cross in box A / F		**1**
		ii	M1	cross in box F		**1**
		iii	M1	cross in box F		**1**
		iv	M1	cross in box B		**1**
	c		M1	car/vehicle (fuel)		**1**
			M2	kerosene / paraffin		**1**
			M3	roads / roofs		**1**
	d	**i**	M1	oxygen		**1**
			M2	water / steam		**1**
		ii	M1	cross in box 3		**1**

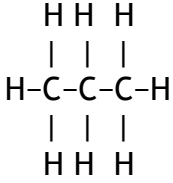
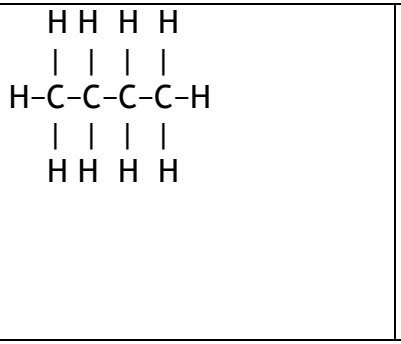
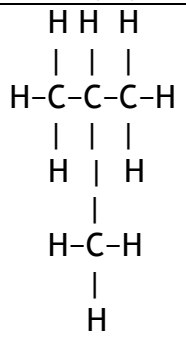
Question			Mark	Acceptable answers	Notes	Total
5	**a**	**i**	M1	melting		**1**
		ii	M1	Z		**1**
		iii	M1	heat / energy		**1**
	b		M1	solid / ice		**1**
	c	**i**	M1	$H_2O(s)$		**1**
		ii	M1	$H_2O(g)$		**1**
	d	**i**	M1	aq		**1**
		ii	M1	evaporation / V	Accept boiling / liquid → gas	**1**
			M2	condensation / W	Accept gas/vapour → liquid / liquefaction	**1**
	e	**i**	M1	sodium		**1**
		ii	M1	(squeaky) pop / explosion		**1**
		iii	M1	blue / purple		**1**

Question			Mark	Acceptable answers	Notes	Total
6	**a**		M1	cross in box A		**1**
		ii	M1	argon / Ar		**1**
	b	**i**	M1	(X) cross in box 3	Award 1 for cross in box 1 for X and cross in box 3 for Y	**1**
			M2	(Y) cross in box 1		**1**
		ii	M1	cross in box 2		**1**
		iii	M1	green		**1**
			M2	yellow / orange	Reject red	**1**
		iv	M1	fire extinguishers / fizzy drinks		**1**
	c		M1	oxidised because gain of O/oxygen/loss of electron(s)	Accept increased oxidation state	**1**
	d	**i**	M1	oxygen used up/reacted/combined with magnesium	Accept part of the air used up	**1**
		ii	M1	$5 - 4 = 1$ (dm^3)	Award 2 for correct final answer with working Award 1 for correct final answer with no working	**1**
			M2	$(1 \div 5) \times 100 = 20$ (%)		**1**

SECTION B

Question			Mark	Acceptable answers	Notes	Total
7	**a**		M1	350 - 550 °C	Units required	**1**
			M2	100 - 300 (atm(ospheres))	Units not required	**1**
			M3	iron / Fe (catalyst)	Ignore iron oxide Ignore oxidation states	**1**
	b		M1	condensation / liquefaction / gas → liquid		**1**
	c	**i**	M1	$NH_3 + HNO_3 \rightarrow NH_4NO_3$	Reactants = 1 Products = 1 Award 1 if both reactant and product formulae correct but unbalanced	**2**
		ii	M1	fertiliser / explosives		**1**

Question			Mark	Acceptable answers	Notes	Total
8	**a**		M1	copper less reactive than iron / iron more reactive than copper	Do not accept iron(II) in place of iron or copper(II) in place of copper Accept negative (copper is not more reactive than iron) Accept iron is a better oxidising agent than copper / copper ions are a better reducing agent that iron ions.	**1**
	b		M1	Copper((II)) / Cu^{2+} /$Cu(H_2O)_6^{2+}$ / hexa aqua copper(II)		**1**
	c		M1	copper / Cu		**1**
	d		M1	iron is formed/ iron displaced by zinc		**1**
	e		M1	zinc / Zn		**1**
	f		M1	green precipitate	Ignore qualifiers such as dark/light/sludge Reject all other colours Accept solid / suspension	**1**
			M2	iron(II) hydroxide / $Fe(OH)_2$	Accept ferrous hydroxide or formula of complex ion	**1**

Question			Mark	Acceptable answers	Notes	Total
9	**a**	**i**	M1	contain hydrogen and carbon **only**	Reject hydrogen or carbon **molecules/ions**	**1**
		ii	M1	no double bond(s) / only single bonds (between carbon atoms)	Accept no multiple bonds / no C=C	**1**
	b	**i**	M1	alkane		**1**
		ii	M1	C_nH_{2n+2}	Accept any other symbol in place of "n" n and 2n+2 must be clearly smaller than C and H.	**1**
		iii	M1	Similar/same chemical properties	Any two for 1 each	**2**
			M2	gradation in physical properties (or specified physical property – such as "increase in boiling point")		
			M3	neighbouring members (formulae) differ by CH_2		
	c		M1		All bonds/atoms must be shown.	**1**
	d	**i**	M1	(compounds with) same molecular formula	Reject atoms/elements/ions	**1**
			M2	(but) different structures/structural formulae/displayed formulae		**1**
		ii	M1	butane OR (2-)methylpropane		**1**
			M2	 		**1**
	e		M1	methane + oxygen → carbon dioxide + water/steam	Reactants = 1	**2**

			M2		Products = 1	
					If air given in place of oxygen, products mark can still be awarded Award M1 and M2 independently	

Question			Mark	Acceptable answers	Notes	Total
10	**a**		M1	(1) H_2	Ignore state symbols	**1**
			M2	(1) hydrogen		**1**
			M3	(3) H_2O + CO_2	Ignore state symbols Accept answers in either order	**1**
			M4	(3) water	Accept answers in either order	**1**
			M5	(3) carbon dioxide		**1**
	b		M1	effervescence / fizzing / bubbles	Ignore "gas formed"	**1**
	c		M1	white precipitate/solid/suspension		**1**
			M2	barium sulphate		**1**

Question			Mark	Acceptable answers	Notes	Total
11	**a**	**i**	M1	electron transfer		**1**
			M2	from magnesium to fluorine		**1**
			M3	magnesium loses 2 electrons **and** (each) fluorine gains 1 electron		**1**
					Ignore covalent Electron sharing = 0	
		ii	M1	Mg^{2+}	Accept answers in either order	**1**
			M2	F^-		**1**
	b	**i**	M1	carbon / graphite / C		**1**
		ii	M1	Melt / fused	Ignore dissolved in water	**1**
		iii	M1	(silvery liquid) lead	if M1 and M2 wrong way round then give 1 mark, but do not award M3	**1**
			M2	(brown gas) bromine		**1**
			M3	(silvery liquid) – or cathode AND (brown gas) + or anode		**1**

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