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Mark Scheme (Results)
November 2010

IGCSE

IGCSE Chemistry (4335) Paper 1F
IGCSE Science (Double Award) (4437) Paper 08

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IGCSE CHEMISTRY 4335/03 4437/08 – NOVEMBER 2010

Question			Mark	Acceptable answers	Notes	Total
1	**a**		M1	C		**1**
			M2	D		**1**
			M3	B		**1**
	b		M1	A		**1**
			M2	C		**1**
	c	**i**	M1	A / E / F		**1**
					Accept correct names for all of above	
		ii	M1	to neutralise /use up the acid	Accept complete the reaction	**1**
		iii	M1	zinc carbonate / $ZnCO_3$		**1**

Question			Mark	Acceptable answers	Notes	Total
2	**a**		M1	20.60	Final zero needed	**1**
			M2	1.75		**1**
					Award 1 for two correct readings in wrong order	
			M3	18.85	CQ on M1 and M2	**1**
	b	**i**	M1	ticks under 2nd and 4th columns		**1**
		ii	M1	$\frac{26.1(0) + 26.2(0)}{2}$	No penalty for missing zeroes CQ on ticked values	**1**
			M2	26.15	Ignore unit M2 DEP on ticked values or on M1 Correct final answer scores M1 and M2	**1**
					If other than 2nd and 4th values ticked, see separate table showing acceptable answers for possible combinations of	

					ticked values All answers must be to 2 dp except for 26.6 from averaging all four titres	

Question			Mark	Acceptable answers	Notes	Total
3	**a**		M1	sulphur / S / S_8		**1**
	b	**i**	M1	10 (cm^3)	Accept value written in table	**1**
		ii	M1	temperature / conical flask / swirling / cross / concentration of acid	Accept concentration of <u>original</u> thiosuphate solution	**1**
	c		M1	scale of 1 cm rep 5 s	Scale must start at zero or 5 but starting zero not required Accept 1 cm rep 4 s Must be at least two numbers	**1**
			M2 M3	five points correctly plotted	Must be to the nearest gridlines Deduct 1 mark for each error	**2**
			M4	curve of best fit including 80% or 100% but not both	Line must not go to the origin	**1**
	d	**i**	M1	1 ÷ 9		**1**
			M2	0.11 (s^{-1})	No ECF	**1**

		ii	M1	times are short(er) / reaction is fast		**1**
			M2	big(ger) (percentage) error in measuring time/using clock	Accept difficult to measure time (accurately)	**1**
	e	**i**	M1	rate (directly) proportional to concentration	Accept "concentration proportional to rate" Accept quantitative answer such as "rate doubles when concentration doubles" Do not accept "they are proportional" Award 1 mark for qualitative expression such as "rate increases as concentration increases"	**2**
		ii	M1	collisions	OWTTE	**1**
			M2	more frequent	Must be some reference to time, eg more per second	**1**
					If atoms or molecules used in place of particles/ions, award max 1 Do not award M2 if any reference to increasing speed /energy/activation energy Ignore references to effectiveness of collisions	

Question			Mark	Acceptable answers	Notes	Total
4	**a**		M1	18.8		**1**
			M2	24.2		**1**
					Award 1 for two correct readings in wrong order	
			M3	5.4	CQ on M1 and M2	**1**
	b		M1	repeat		**1**
	c	**i**	M1	4		**1**
			M2	not stated whether temperature increase or decrease	DEP on M1	**1**
		ii	M1	(headings) salt/student number AND start temp AND end temp	Ignore mass of salt and student column headings	**1**
			M2	(units) °C for both temperature columns	Accept °C in one column if start and end temps included	**1**

			M3 M4	(results) all three salts/student numbers and six temps included	Deduct 1 mark for each error and omission Two correct temperatures for one experiment in wrong order loses 1 mark	**2**
					If results for student identified in (c)(i) included, then only M1 and M2 can be awarded	
	d	**i**	M1	insulate / use a polystyrene cup (instead of a beaker)		**1**
		ii	M1	salt name cannot be plotted / no connection between name and temperature change	Accept only one continuous variable / one variable is categoric / only one set of numbers	**1**
		iii	M1	100	Ignore units	**1**

Question			Mark	Acceptable answers	Notes	Total
5	**a**		M1	Q		**1**
	b		M1	R		**1**
	c		M1	R and S		**1**
	d		M1	(−)1.7 (V)		**1**
	e		M1	$V \rightarrow V^{2+} + 2e$		**1**
			M2	$W^{2+} + 2e \rightarrow W$		**1**
					Accept in either order	
	f	**i**	M1	no reaction		**1**
		ii	M1	$T + W^{2+} \rightarrow T^{2+} + W$		**1**

PAPER TOTAL: 50 MARKS

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