edexcel
advancing learning, changing lives

Mark Scheme (Results)
November 2009

IGCSE

IGCSE Chemistry (4335) Paper 03
IGCSE Science (Double Award) (4437) Paper 08

Edexcel Limited. Registered in England and Wales No. 4496750
Registered Office: One90 High Holborn, London WC1V 7BH

A PEARSON COMPANY

Edexcel is one of the leading examining and awarding bodies in the UK and throughout the world. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers.

Through a network of UK and overseas offices, Edexcel's centres receive the support they need to help them deliver their education and training programmes to learners.

For further information, please call our GCE line on 0844 576 0025, our GCSE team on 0844 576 0027, or visit our website at www.edexcel.com.

If you have any subject specific questions about the content of this Mark Scheme that require the help of a subject specialist, you may find our Ask The Expert email service helpful.

Ask The Expert can be accessed online at the following link:

http://www.edexcel.com/Aboutus/contact-us/

Alternately, you can speak directly to a subject specialist at Edexcel on our dedicated Science telephone line: 0844 576 0037

(If you are calling from outside the UK please dial + 44 1204 770 696 and state that you would like to speak to the Science subject specialist).

November 2009

Publications Code UG022298

Question			Mark	Acceptable answers	Notes	Total
1	**a**		M1	(A) mortar	Ignore pestle	**1**
			M2	(B) (glass) rod		**1**
			M3	(C) beaker		**1**
			M4	(D) funnel		**1**
			M5	(E) conical flask		**1**
			M6	(F) tripod		**1**
	b		M1	speed up dissolving of salt / make salt dissolve faster / make more salt dissolve	Accept make salt dissolve Reject "rock salt" and "mixture" and "it" Reject reference to reaction	**1**
	c		M1	filtration	Reject sieving	**1**
	d		M1	clay and sand	Both needed	**1**
	e		M1	sodium chloride	Ignore salt	**1**
					TOTAL	**10**

Question			Mark	Acceptable answers	Notes	Total
2	**a**	**i**	M1	155 (cm^3)		**1**
		ii	M1	71 (cm^3)		**1**
		iii	M1	**oxygen** used up / iron reacts with **oxygen** / no **oxygen** left	ignore water used up reject "gas" or "air" used up	**1**
		iv	M1 M2	19 / 18.7 {100-(ii) / (i)} x 100	A minimum 2 sig figs If answer incorrect, award 1 mark for either volume of oxygen used (29) or % of air left (81) Answer CQ on (i) and (ii)	**2**
	b	**i**	M1	temperature and °C AND end mass / mass after 3 weeks	°C can be in heading or after each value Units not needed	**1**
			M2	12 data values correctly entered		**1**
			M3	mass changes correct (0.08, 0.24 and 0.5(0))		**1**
		ii	M1	different masses of iron / different volumes of air in boxes / different size boxes / **room temp** varies / different times / not enough air (for reaction to complete)		**1**
	c	**i**	M1	no reaction / did not rust		**1**
		ii	M1	stayed the same		**1**
			M2	no water in the beaker / some water spilt / all reacted / reaction complete / reaction stopped / all oxygen used		**1**
		iii	M1	in the room		**1**
			M2	temperature might have changed / not constant	Accept biggest variation / uneven changes M2 dep on M1	**1**
		iv	M1	suitable vertical scale	At least half the height used	**1**
			M2	data at 4 weeks used		**1**
			M3	all **bars** correct heights	If plotted data for wrong week, award this mark if all bars fit data from same week. Reject if not bars	**1**
					TOTAL	**17**

Question			Mark	Acceptable answers	Notes	Total
3	**a**		M1	use pipette/burette (to measure acid volume) collect gas in syringe / burette /	Accept idea of sealed system e.g. partitioned flask or tube in flask	**1**
	b		M1	37 (cm^3)		**1**
	c		M1	insoluble in water / no reaction with water		**1**
	d	**i**	M1	22.5		**1**
			M2	38.5		**1**
		ii	M1	16(.0)	CQ on (i)	**1**
		iii	M1	use water bath / use bigger volume of acid / more acid	Reject insulation / lagging	**1**
	e		M1	same mass/amount of magnesium	Any two for 1 each . Reject "amount of acid" Reject "concentration of acid"	**1**
			M2	same form of magnesium (eg powder/ ribbon) / surface area		**1**
			M3	same volume of (diluted) acid		**1**
	f	**i**	M1	15% / second one		**1**
		ii	M1	33 circled		**1**
			M2	gas leaked out/not collected / acid too concentrated / acid too dilute (must specify less than 10%) / acid was cooler / bigger pieces of metal / mass of metal too small / time less than 20 seconds		**1**
		iii	M1	24 (cm^3)		**1**
	g	**i**	M1	cross in second box		**1**
		ii	M1 M2	all points plotted correctly	Deduct 1 mark per error	**1**
			M3	Curve through first 4 points		**2**
			M4	Curve through last 4 points	continuation of line so they cross must follow curve of results	**1**
	h	**i**	M1	correct reading of rate from graph		**1**
			M2	correct reading of concentration from graph		**1**

		ii	M1	correct calculation of volume from (i) {rate from(i) x 20}		**1**
		iii	M1	repeat experiment using concentration from (i) / same concentration	Not just "repeat experiment"	**1**
			M2	measure gas volume collected (in 20 seconds)	M2 dependant on M1	**1**
					TOTAL	**23**

PAPER TOTAL: 50 MARKS

Further copies of this publication are available from
International Regional Offices at www.edexcel.com/international

For more information on Edexcel qualifications, please visit www.edexcel.com
Alternatively, you can contact Customer Services at www.edexcel.com/ask or on + 44 1204 770 696

Edexcel Limited. Registered in England and Wales no.4496750
Registered Office: One90 High Holborn, London, WC1V 7BH