



General Certificate of Secondary Education

Science: Single Award 3463/2F *Specification B*

Mark Scheme

2006 examination – June series

Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation meeting attended by all examiners and is the scheme which was used by them in this examination. The standardisation meeting ensures that the mark scheme covers the candidates' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for the standardisation meeting each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed at the meeting and legislated for. If, after this meeting, examiners encounter unusual answers which have not been discussed at the meeting they are required to refer these to the Principal Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of candidates' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

Single Award (Co-ordinated) Foundation Tier 3463/2F

3463/2F Q1

question	answers	extra information	mark
(a)	sodium fizzes	apply the list principle to additional answers	1
	sodium moves around		1
	sodium sometimes melts		1
		after 3 marks deduct one mark for each additional tick	
(b)(i)	lower than sodium	accept low or very low (owtte) accept any position above Ag and below Na accept comparative reactivity answers do not accept at the bottom	1
(ii)	D		1
(c)	sodium nitrate + water	accept in any order accept circled within box do not accept sodium + nitrate do not accept formulae	2
total			7

3463/2F Q2

question	answers	extra information	mark
(a)	B		1
(b)	F		1
(c)	D		1
(d)	E		1
total			4

3463/2F Q3

question	answers	extra information	mark
(a)(i)	speeds it up (owtte)	accept answers such as 'lowers activation energy'	1
(ii)	enzymes		1
(b)	lipases		1
	proteases		1
(c)	work at low temperatures or removes <u>stains</u> faster / better or removes <u>stains</u> that are difficult to remove by other means (owtte)	if stated must be below 40°C ignore reference to bacteria accept break down stains accept specific stains but not dirt do not accept gets washing whiter do not accept references to pollution / environment / cost	1
total			5

3463/2F Q4

question	answers	extra information	mark
(a)(i)	blistering reddening		1 1
(ii)	gloves / safety glasses / goggles / visor	ignore: overalls / apron / lab coat	1
(b)	hydroxide		1
(c)(i)	the metal will react / be dissolved / form a solution / gradually corrode away	<p>“it” = saucepan / metal</p> <p>accept answers in terms of production / evolution of H₂</p> <p>do not accept reference to rust</p> <p>(highly) reactive is insufficient</p> <p>ignore breakdown / wears away</p>	1
(ii)	burning splint / flame (owtte) pops (owtte)		1 1
total			7

3463/2F Q5

question	answers	extra information	mark
(a)	accurate plotting of points ($\pm\frac{1}{2}$ square) sensible attempt at a smooth curve	2 marks for all points 1 mark for 3 or 4 points accept if points cannot be seen and lines go through points may not be perfect but do not accept joining the dots ignore any extension before first point do not accept multiple lines that cover more than one large square	2 1
(b)(i)	75 seconds	accept answers correctly read from their graphs ($\pm \frac{1}{2}$ square) accept 73 to 77 without reference to graph	1
(ii)	rate doubles (owtte)	accept time halves accept speed doubles do not accept just gets faster etc. do not accept the rate of reaction takes half the time	1
(iii)	more particles (owtte) <u>more</u> collisions	n.b. they / them = particles accept molecules max 1 mark for any reference to particles moving faster / gaining energy ignore reference to 'react'	1 1
total			7

3463/2F Q6

question	answers	extra information	mark
(a)(i)	broken down (owtte)	accept big molecules to small molecules or production of smaller molecules do not accept separated do not accept cracking / breaking down to elements do not accept mention of oxygen ignore decompose / decomposed	1
	by heat / high temperature	(owtte)	1
(ii)	carbon dioxide	accept CO ₂ do not accept CO ² , Co ₂ (apply halfway rule for O and ₂)	1
(iii)	to mix the reactants (owtte)	accept to increase rate of reaction accept idea of movement accept 'so that the reactants are heated evenly' (owtte) accept to ensure complete reaction	1
(b)(i)	coke	accept carbon / C do not accept coal / charcoal	1
	iron	accept Fe / pig iron / cast iron do not accept FE ignore references to solid / molten etc.	1
(ii)	oxygen removed (owtte)	accept gains electrons accept decrease in oxidation number / state do not accept oxide removed	1

Continued

3463/2F Q6

question	answers	extra information	mark
(iii)	for any sensible idea e.g. <ul style="list-style-type: none">• saves energy• less waste (to dispose of)• less CO₂ / pollution caused• makes use of waste product / slag• two products from one process• saves money• less limestone / clay needs to be obtained / used	answers have to be chemically correct	1
	either explanation of the idea or another sensible idea	accept “environmentally friendly” as an explanation of a bullet	1
total			9

3463/2F Q7

question	answers	extra information	mark
(b)	any two from: <ul style="list-style-type: none"> • plastic tar is harder (than ordinary tar) • plastic tar has better resistance to water penetration (than ordinary tar) • plastic tar lasts longer (than ordinary tar) • using plastic waste to make plastic tar means less has to be disposed of in other ways i.e. buried / burned • plastic is recycled 	ignore cost / strength ignore saving tar or bitumen accept more waterproof accept it causes less pollution accept makes use of a waste product	2
total			6