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ASSESSMENT and QUALIFICATIONS ALLIANCE

General Certificate of Secondary Education

Science: Double Award (Modular) 3468/2F

Specification A

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.

Science: Double Award (Modular)

Summer 2006 3468/2F

3468/2F Q1

	answers	extra information	mark
(a)	soil roots air leaves	order of words **must** be correct all **four** correct 3 marks three **or** two correct 2 marks one correct 1 mark	3
(b)	digest respiration warm nutrients fertiliser		1 1 1 1 1
total			8

3468/2F Q2

	answers	extra information	mark
	Quality of written communication *1 mark for the correct sequence* *carbon dioxide/sulphur dioxide → into water/rain → acid forms*		1
	• burning (of coal)		1
	• forms sulphur dioxide/SO_2	accept forms carbon dioxide/CO_2 other gases are neutral	1
	• this dissolves/mixes/reacts with water/rain		1
	• makes acid rain/water acidic		1
total			5

3468/2F Q3

question	answers	extra information	mark
(a)	sugar yeast		1 1
(b)	alcohol/ethanol		1
(c)	35 °C		1
(d)(i)	turns cloudy/milky/white/chalky/misty	do **not** accept it would change colour unless qualified	1
(ii)	carbon dioxide/CO_2		1
total			6

3468/2F Q4

	answers	extra information	mark
(a)(i)	nitrogen		1
(ii)	reversible reactions are chemical reactions in which the products can react to form the chemicals you started with	accept reactions that go both ways do **not** accept a reaction that can go backwards	1
(b)	oxygen 3/three		1 1
(c)(i)	corrosive	**must** be corrosive	1
(ii)	any **two** from: • increase the temperature • increase the concentration (of the acid) • add a catalyst • increase the surface area (of the metal)	accept a description of how to achieve these do **not** accept add more (nitric) acid stirring is neutral	2
total			7

3468/2F Q5

question	answers	extra information	mark
	newtons metres force distance joules	order of words **must** be correct all **five** correct 4 marks four correct 3 marks three/two correct 2 marks one correct 1 mark if the first two parts are **unanswered** then allow: newtons for force metres for distance	4
total			4

3468/2F Q6

question	answers	extra information	mark
		words **must** be linked to correct object and **not** just to the orbit all **three** correct 2 marks two or one correct 1 mark	2
total			2

3468/2F Q7

question	answers	extra information	mark
(a)(i)	greater than		1
(ii)	at a steady/constant speed		1
(b)	thinking braking fast alcohol wet		1 1 1 1 1
total			7

3468/2F Q8

question	answers	extra information	mark
(a)	(fractional) distillation		1
(b)	the greater the number of carbon atoms the higher the boiling point	accept the lower the number of carbon atoms the lower the boiling point accept only a complete statement	1
(c)(i)	hydrogen	**must** be the name	1
(ii)	carbon dioxide water vapour		1 1
total			5

3468/2F Q9

question	answers	extra information	mark
(a)	infra red/ir		1
(b)	black/dark/matt/dull		1
(c)	bar with correct name in any order 1 mark each windows 1500 drafts 1500 ceilings 2000 walls 4000	accept all bars correct but no labels for 2 marks	4
total			6

3468/2F Q10

question	answers	extra information	mark
(a)	phytoplankton	accept tiny plants	1
(b)	(decrease) • **more** cod • (cod) will eat sand eels (increase) • humans would take **more** herring/minke whale • (so) sand eels have **fewer** predators	 accept humans have less cod (humans) will take/eat more sand eels accept minke whale would have **more** cod to eat (so) would eat **fewer** sand eels	 1 1 1 1
total			5

3468/2F Q11

question	answers	extra information	mark
(a)	the numbers of any source		1
(b)	respiration	do **not** accept breathing	1
(c)	accept **two** correct comparisons related to information in the table e.g. walk instead of transport, ship instead of plane	if no marks gained from comparisons, award one mark for using **less** of any form of transport or **less** fuel or walk or use public transport references to alternative fuels neutral	2
(d)	any **one** from: • polar caps melt • climate change (storms) • sea levels rising (floods) • temperature increases	do **not** accept if ozone mentioned accept global warming	1
total			5

3468/2F Q12

question	Answers	extra information	mark
(a)	carbon dioxide produced	accept a gas produced	1
(b)(i)	any **two** from: • just after start rate is fast • reaction then slows • eventually the reaction stops	maximum 1 mark if they state that rate levels off/constant rate 'mass' is neutral description must be about the rate of reaction shown on the graph	2
(ii)	• just after start the concentration of acid is high/number of acid particles is high • so there are many collisions • the concentration of acid decreases/number of acid particles less • so there are fewer collisions	explanation **must** be linked to the rate changes as shown on the graph "less acid" is neutral accept the concentration of the acid is zero/no acid particles/no acid left accept so there are no collisions	1 1 1 1
(c)	51.6 gains 3 marks else relative formula mass of copper carbonate = 124 gains 1 mark and $\frac{64}{124} \times 100$ gains 1 mark	accept 52 allow ecf from incorrect relative formula mass	3
total			10

3468/2F Q13

question	answers	extra information	mark
(a)(i)	remains at a steady/constant speed		1
(ii)	360 gains 2 marks else (distance =) speed × time or (distance =) 36 × 10 gains 1 mark	 accept suitable abbreviations	2
(iii)	decelerating/slowing down		1
(iv)	1.2 gains 3 marks correct unit gains 1 mark i.e. $m/s^2/ms^{-2}$ else (acceleration =) $\frac{\text{change in velocity}}{\text{time (taken)}}$ gains 1 mark and (acceleration =) $\frac{12}{10}$ gains 1 mark	 accept m/s/s or metres per second per second do **not** accept mps^2 accept suitable abbreviations	3 1
(b)	any **two** points shown on the graph from: • steeper line starting at zero • reaches a greater speed • stops in less time		2
total			10

3468/2F Q14

question	answers	extra information	mark
(a)(i)	variable resistor	accept rheostat	1
(ii)	voltmeter connected correctly across to the left hand side of the electromagnet		1
(iii)	12 gains 3 marks else (potential difference =) current × resistance gains 1 mark and (potential difference =) 0.5 × 24 gains 1 mark	accept suitable abbreviations	3
(b)	*Quality of written communication* *1 mark for the correct sequence* *high current flow → electromagnet is stronger → switch is attracted (down)* • high current flows • electromagnet is stronger • switch is attracted (down) • circuit is broken/current cannot flow		1 1 1 1 1
total			10