

GCSE 2004
June Series



Mark Scheme

SCIENCE: SINGLE AWARD (Modular) 3469F

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Dr. Michael Cresswell Director General

Science: Single Award (Modular)**June 2004****3469F****3469F Q1**

question	answers	extra information	mark
(a)(i)	amphibia, reptiles, birds, mammals	all needed accept names animals from the diagram	1
(ii)	reptiles, birds	both needed	1
(iii)	cartilage fish		1
(b)(i)	from fossils / bones / remains		1
(ii)	diseases	either order	1
	predators		1
total			6

3469F Q2

question	answers	extra information	mark
(a)	cell membranes	any clearly defined answer is correct	1
	recessive		1
	nervous system		1
	dominant		1
(b)	chromosomes		1
	enzymes		1
total			6

3469F Q3

question	answers	extra information	mark
	provides oxygen causes death catches fire easily attacks and destroys living tissue harmful is swallowed	N.B. mark the left hand boxes by putting crosses on wrong or blank boxes no crosses = 5 ticks 1 cross = 4 ticks 2 crosses = 3 ticks 3 crosses = 2 ticks 4 crosses = 1 tick 5 crosses = 0 tick	5
total			5

3469F Q4

question	answers	extra information	mark
(a)(i)	work at low temperatures / save energy		1
	work at low or atmospheric pressures / need less expensive equipment		1
(ii)	any two from: <ul style="list-style-type: none"> • easily broken down by high temperature / low pH • difficult to separate from water-soluble products • very expensive to buy 		2
(b)(i)	lipase		1
(ii)	isomerase		1
(iii)	protease		1
total			7

3469F Q5

question	answers	extra information	mark
(a)	4		1
(b)	3		1
(c)	3 Hz / hertz	correct answer with no working = 2 allow 1 mark for $f = \text{time} \div \text{number}$ or correct working i.e., $12 \div 4$ N.B. correct answer from incorrectly recalled relationship / substitution = 0 do not accept HZ, hz, hZ allow waves / cycles per second allow wps, w/s, cps, c/s	2 1
total			5

3469F Q7

question	answers	extra information	mark
(a)(i)	resistor		1
(ii)	voltage / potential difference / volts / v		1
(iii)	current / amps / A		1
(b)	potential difference = current \times resistance	no mark if more than one box ticked	1
(c)	sound	sound and light in either order	1
	light		1
	heat / thermal energy		1
total			7

3469F Q8

question	answers	extra information	mark
(a)	all plots correct	Tolerance $\pm \frac{1}{2}$ square allow 1 mark for 2 correct plots	2
(b)	6	correct answer with no working = 2 allow 1 mark for $(60 \div 100) \times 10$ N.B. correct answer from incorrectly recalled relationship / substitution = 0	2
(c)	lungs		1
	liver		1
	kidneys		1
total			7

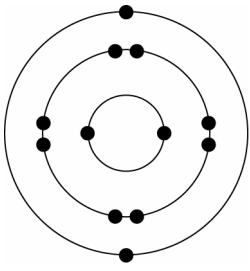
3469F Q9

question	answers	extra information	mark
(a)	ovaries	accept ovary	1
	womb	accept uterus	1
	fertility	accept FSH do not accept fertilisation	1
	contraceptive(s)	allow birth control accept oestrogen or progesterone do not accept pill alone	1
(b)	man XY	allow (chromosomes) different	1
	woman XX	allow (chromosomes) same genes and alleles are neutral allow 1 mark for one is XX and one is XY	1
total			6

3469F Q10

question	answers	extra information	mark
(a)	any two from <ul style="list-style-type: none"> • space • light • water • mineral ions / ions / salts 	accept nutrients food is neutral	2
(b)	Quality of written communication: correct sequence : dissolves → acid → damage any two from <ul style="list-style-type: none"> • dissolves in rain • forms acid • (which) damages trees • makes rivers / lakes acid • kills or harms aquatic animals / plants • corrosion / weathering / erosion 	maximum 1 mark if reference made to greenhouse effect or to ozone layer	1 2
total			5

3469F Q11

question	answers	extra information	mark
(a)	9 protons / Proton Number 9	mass / atomic number is neutral	1
	10 neutrons		1
	electron arrangement 2,7 / 9 electrons	incorrect configurations neutral if no points scored, allow 1 mark for nucleus surrounded by electrons or nucleus contains neutrons and protons	1
(b)		Mark is for 2,8,2 arrangements. accept electrons anywhere in correct orbit	1
total			4

3469F Q12

question	answers	extra information	mark
(a)(i)	catalyst / enzyme		1
(ii)	any two from <ul style="list-style-type: none"> • heat • stir / shake • increase concentration of peroxide / catalyst 	do not accept increase volume of peroxide	2
(b)	oxygen lost	do not allow incorrect gas	1
total			4

3469F Q13

question	answers	extra information	mark
(a)	1:2	accept 0.5:1 reject 2 to 1	1
(b)	gases combine in simple / whole-number ratios / proportions		1
(c)	(Gay-Lussac) twice as much hydrogen as oxygen (formed when water electrolyses)	answer must refer to volumes not just atoms	1
(d)	Reference to (shared) electrons / (covalent) bonding	reject <u>ionic</u> bonding accept electric forces	1
total			4

3469F Q14

question	answers	extra information	mark
(a)	(orbit)		1
	low		1
	polar		1
	(reasons) can scan whole of Earth / a country each day / since Earth rotates	allow a geostationary satellite would only scan part of the country	1
	from close range or since Earth rotates beneath it		1
(b)	gravity		1
	correct / high speed		1
total			6

3469F Q15

question	answers	extra information	mark
(a)(i)	cannot penetrate aluminium	allow can only pass through air / paper too weak is neutral	1
(ii)	gamma rays not affected (by thin aluminium)	allow <u>all</u> / <u>most</u> (gamma rays) to pass through too strong is neutral danger is neutral	1
(b)(i)	(nuclei) unstable		1
(ii)	causes harm / damage to body / cells detail e.g., causes mutations / causes cancer / damages DNA / damages chromosomes / kills cells	allow radiation sickness allow two effects for 2 marks	1 1
total			5

3469F Q16

question	answers	extra information	mark
(a)	a qualitative answer i.e fell for 1 mark a quantitative answer for 2 marks i.e to less than half / by 37 per (100 000) from 54 to 17 (per 100 000)		2
(b)	fewer women than men died women deaths rose then fell		1 1
(c)	275	allow 273 – 277	1
(d)	as number of men / women smoking falls so do deaths from lung cancer as numbers of women who smoke increases, so do deaths from lung cancer		1 1
total			7