

GCSE 2004

June Series



Mark Scheme

SCIENCE: DOUBLE AWARD (Modular) 3468/1F

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.

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Dr. Michael Cresswell Director General

Science: Double Award (Modular)**Summer 2004****3468/1F****3468/1F Q1**

question	answers	extra information	mark
(a)(i)	amphibia, reptiles, birds, mammals	all needed accept named 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

3468/1F 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

3468/1F Q3

question	answers	extra information	mark
(a)	less dense than air	no marks if four or five boxes ticked	1
	very unreactive	maximum 1 mark if three boxes ticked	1
(b)	CO ₂	do not penalise upper / lower case or superscript	1
	HCl		1
	NH ₃		1
total			5

3468/1F Q4

question	answers	extra information	mark
(a)	chlorine	accept Cl ₂ do not accept Cl	1
(b)	lighted splint	do not accept glowing splint	1
	pop / explosion		1
(c)	sodium + water	both needed accept Na + H ₂ O	1
	sodium hydroxide + hydrogen	both needed accept NaOH + H ₂ ignore balancing	1
(d)	photographs / films	do not accept microwaves / radiowaves	1
	light / ultra violet / infra red / gamma rays / alpha radiation / beta radiation		1
total			7

3468/1F Q7

question	answers	extra information	mark
(a)	hard, tough, strong	maximum 2 marks if four boxes ticked	1
	used as catalysts	maximum 1 mark if five boxes ticked	1
	used in making electricity cables	no marks if six boxes ticked	1
(b)	acid	allow nitric acid	1
	water		1
(c)(i)	zinc / iron / tin / lead / copper / silver / gold / platinum	allow fully correct symbol	1
(ii)	copper / silver / gold / platinum	allow fully correct symbol	1
total			7

3468/1F Q8

question	answers	extra information	mark
(a)(i)	all plots correct	Tolerance $\pm \frac{1}{2}$ square allow 1 mark for 2 correct plots	2
(ii)	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
(b)	lungs		1
	liver		1
	kidneys		1
total			7

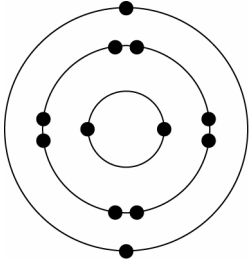
3468/1F Q9

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

3468/1F Q10

question	answers	extra information	mark
(a)	genetically identical / same genetic information / same DNA	accept identical / same chromosomes / alleles / genes allow 1 mark for identical / same characteristics	2
(b)	Quality of written communication: Correct sequence : split → transfer any two from <ul style="list-style-type: none"> • split apart cells (from embryo) • before specialised • implant / transplant • into host / mother / uterus/ womb 	allow early stage	1 2
total			5

3468/1F 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

3468/1F Q12

question	answers	extra information	mark
(a)(i)	$2 \text{Mg} + \text{O}_2 \rightarrow 2 \text{MgO}$	both 2s needed allow $\frac{1}{2} \text{O}_2$ or any correct multiple	1
(ii)	solid		1
	gas		1
(b)	$\text{MgCl}_2 / \text{Cl}_2 \text{Mg}$	do not accept MG mg mG CL cl cL ignore charges	1
total			4

3468/1F 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

3468/1F Q14

question	answers	extra information	mark
(a)(i)	absorbed by water / water heated		1
	hot water heats (rest of) food / idea of particle vibration		1
(ii)	$300\,000\,000 / 3 \times 10^8$	correct answer with no working = 2 allow 1 mark for $s = f \times w$ or correct working i.e., $10000 (000000) \times 0.03$ N.B. correct answer from incorrectly recalled relationship / substitution = 0	2
(b)(i)	shock waves / seismic waves / earthquake waves	allow P waves and / or S waves	1
(ii)	seismometer / seismograph		1
total			6

3468/1F 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 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	allow radiation sickness allow two effects for 2 marks	1 1
total			5

3468/1F 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