



General Certificate of Secondary Education

Science: Double Award (Modular)

3468/1F

Specification A

Mark Scheme

2005 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.

3468/1F Q1

question	answers	extra information	mark
(a)	agilisaurus / camarasaurus / ornitholestes		1
(b)	eorapter	allow lagosuchus	1
(c)	lagusuchus (it) walks on hind limbs / two limbs / alamosaurus has <u>longer</u> neck / lagusuchus has back legs longer than front but alamosaurus has the reverse		1
(d)(i)	alamosaurus		1
(ii)	increased		1
(e)	from hard parts / bones / imprints e.g. footprints / parts replaced by other materials / conditions for decay absent or example	buried is neutral	1
(f)	simple billion		1 1
total			8

3468/1F Q2

question	answers	extra information	mark
(a)	genes asexual clones		1 1 1
(b)	keeps cuttings damp / prevents wilting	allow keeps warm / acts like a greenhouse allow keeps pests off	1
total			4

3468/1F Q3

question	answers	extra information	mark
(a)	He		1
(b)	carbon / silicon / germanium / tin / lead	accept correctly written symbols C / Si / Ge / Sn / Pb	1
(c)	copper	accept Cu	1
(d)	iodine	accept I or I ₂	1
total			4

3468/1F Q4

question	answers	extra information	mark
(a)	A – electron		1
	B – nucleus		1
	C – proton		1
	D – neutron		1
(b)	Group 1 / alkali metals has one electron in outer shell	accept 3 protons / 3 electrons / atomic number 3 therefore lithium (so Group 1 / alkali metals)	1 1
(c)	lithium	accept Li	1
total			7

3468/1F Q5

question	answers	extra information	mark
	sunbed – ultraviolet		1
	broken bones – X-rays		1
	mobile phone – microwaves		1
	surgical instruments – gamma (rays)		1
	remote control – infra red		1
total			5

3468/1F Q6

question	answers	extra information	mark
(a)(i)	cat		1
(ii)	tuna		1
(b)(i)	ultrasound	allow ultrasonic	1
(ii)	cleaning / quality control / flaw detection / medical scanning / animal scaring / sonar		1
total			4

3468/1F Q7

question	answers	extra information	mark
	Quality of written communication		1
	correct use of three scientific terms e.g. radiation / α or β or γ / cells / ionisation / mutation (not cells or body) / chromosomes / DNA / genes / cancer		3
	any three from: (materials emit) radiation named type of radiation (α or β or γ) damage / harm / kill cells / chromosomes / DNA / genes cancer mutations ionisation gloves or glass absorb radiation / prevent radiation reaching body or cells	dangerous is neutral	
total			4

3468/1F Q8

question	answers	extra information	mark
(a)	falls from 0.25 to 0.19 but by 0.06 gains two marks	if <u>neither</u> figure given, accept steadily / at constant rate for one mark accept mass of oxygen inversely related / negative correlation to height above sea level for 2 marks	1 1 1
(b)(i)	1.8	accept correct readings from graph for (5 and 6.8) if subtraction incorrect for one mark allow one mark for correct subtraction from incorrect readings	2
(ii)	(blood can carry) <u>more</u> oxygen		1
total			6

3468/1F Q9

question	answers	extra information	mark
(a)	plots all correct all labels present and correct (in correct proportions)	allow one mark for 1 / 2 correct plots	2 1
(b)	oxygen carbon dioxide		1 1
(c)	respiration	do not accept anaerobic respiration	1
total			6

3468/1F Q10

question	answers	extra information	mark
(a)	any three from: factor for colour has two forms yellow dominant since <u>all</u> first generation yellow green recessive since reappears in second generation	accept gene for factor and allele for form accept F1 for first generation accept F2 for second generation	3
(b)(i)	genes	accept alleles / genetic	1
(ii)	nucleus	accept chromosomes / DNA	1
total			5

3468/1F Q11

question	answers	extra information	mark
(a)	any two for one mark each birth control pills are 99 % effective in preventing pregnancy the hormones in the pills give protection against some women's diseases the woman's monthly periods become more regular	answers should relate to the ideas in the list condom (neutral)	2
(b)	any two for one mark each the hormones in the pills have some rare but serious side effects only 99 % effective this method of birth control provides no protection against sexually transmitted disease a woman has to remember to take a pill every day	answers should relate to the ideas in the list	2
total			4

3468/1F Q14

question	answers	extra information	mark
(a)	D		1
(b)	C		1
(c)	B		1
total			3

3468/1F Q15

question	answers	extra information	mark
(a)	protons		1
	protons	accept electrons	1
	neutrons		1
(b)(i)	2 weeks	if answer is incorrect 2 gains two marks weeks gains one mark half of 68 or 34 gains one mark / allow working shown on graph	3
(ii)	protons	reject mass	1
total			7

3468/1F Q16

question	answers	extra information	mark
(a)(i)	88.1	reject 88	1
(ii)	increases		1
(iii)	<p>smoking decreases life expectancy gains one mark</p> <p>BUT quantitative statement e.g. reduces life expectancy by 7.5 years for 25-29 age group gains two marks</p> <p>the lower the age, the greater the effect on life expectancy gains one mark</p> <p>BUT quantitative statement e.g. effect at 25-29 more than double that at 70-74 gains two marks</p>	comparison with females is neutral	3
(b)	<p>(evidence for link)</p> <p>majority of people who get lung cancer are smokers</p> <p>but some non smokers get lung cancer</p>	<p>must be stated or else zero marks statements must relate to the data</p> <p>reject majority of smokers get lung cancer</p>	<p>1</p> <p>1</p>
total			7

3468/1F Q17

question	answers	extra information	mark
	gold – A		1
	iron – C		1
	magnesium – D		1
	potassium – B		1
total			4