



ASSESSMENT and
QUALIFICATIONS
ALLIANCE

Mark scheme

June 2003

GCSE

Science: Single Award Modular

3469

Foundation

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3469/F Q1

	answers	extra information	mark
(a)	mud decayed skeleton rock		1 1 1 1
(b)	idea that living things have changed (over time)	do not allow 'dating' do not credit 'evolved' allow 'compare the skeleton'	1
total			5

3469/F Q2

	answers	extra information	mark
	dominant recessive genes gametes environmental		1 1 1 1 1
total			5

3469/F Q3

	answers	extra information	mark
(a)	-220(°C)	accept without unit do not credit if no minus sign no tolerance allowed	1
(b)	iodine	allow I or I ₂	1
(c)	increase down (the groups)	N.B. must be one comparative or superlative for either position in group or melting point to obtain 2 marks e.g. accept lowest in group has highest melting point for 2 marks accept highest in group has lowest melting point for 2 marks accept highest mass numbers or proton numbers or atomic numbers have highest melting point for 2 marks allow F has lower or lowest melting point for 1 mark allow 'increase from F to I', i.e. referring to graph rather than periodic table for 1 mark F has a low melting point no marks	2
(d)	brittle poor conductor of electricity	maximum 1 mark if three boxes ticked no marks if all four boxes ticked	1 <i>1</i>
total			6

3469/F Q4

	answers	extra information	mark
(a)	sugar		1
		alcohol	1
	milk sugar		1
		lactic acid	1
(b)	lime water turns cloudy / milky / chalky		1 1
total			6

3469/F Q5

	answers	extra information	mark
	microwave – sending information to satellites	N.B. mark the left hand boxes by putting crosses on wrong or blank boxes	1
	gamma rays – killing cancer cells		1
	infra red waves – in radiant heater		1
	ultra violet rays – in sun beds	More than one line from a box negates that mark except for X-rays which may be joined to either ‘bones’ or ‘cancer’ or both	1
	X-rays – producing shadows of bones or killing cancer cells		
		no crosses = 4 ticks 1 or 2 crosses = 3 ticks 3 crosses = 2 ticks 4 crosses = 1 tick 5 crosses = 0 tick	
	total		4

3469/F Q6

	answers	extra information	mark
(a)	one mark for each ray correctly drawn straight to glass then bent towards pupil	accept both rays hitting any part of eye judge straightness by eye accept dotted or dashed lines ignore any arrows N.B. the rays must reach the eye	2
(b)	speed refraction transverse		1 1 1
	total		5

3469/F Q7

	answers	extra information	mark
(a)(i)	86		1
(ii)	222		1
(b)	<p>Quality of written communication <i>The answer to this question requires ideas in good English in a sensible order with correct use of scientific terms. Quality of written communication should be considered in crediting points in the mark scheme</i></p> <p>Any three from</p> <p>radon releases (alpha) radiation accept radon is radioactive</p> <p>(radon or radiation causes) harm or damage to <u>body</u> or <u>cells</u> accept cause cancer /mutations / radiation sickness</p> <p>idea that living near radiation over <u>long period</u> will lead to <u>large ‘dose’</u> of radiation</p> <p>radon (is a gas) <u>that can be breathed in</u></p>		1 1 1
total			5

3469/F Q8

	answers	extra information	mark
(a)	all sectors correctly plotted – 2 marks one plotting error only – 1 mark 2 or more plotting errors 0 marks	breath = 3 sectors urine = 6 sectors sweat = 10 sectors	2
	all sectors labelled	allow 2 labelled only	1
(b)	respiration	breath	1
	amino acids	urine	1
			1
total			7

3469/F Q9

	answers	extra information	mark
	absorber		1
	reflector		1
	emitter		1
total			3

3469/F Q10

	answers	extra information	mark
(a)	the higher the boiling point, the greater the number of carbon atoms		1
(b)	volatility / viscosity / runnyness / flammability / smokiness / amount of oxygen needed for burning / melting point	do not credit how heavy it is / how it burns	1
(c)	hydrogen and carbon (both)	allow H and C (upper case)	1
total			3

3469/F Q11

	answers	extra information	mark
(a)	pituitary (gland) ovaries	allow corpus luteum	1 1
(b)	idea of stimulating release of eggs preventing release of eggs	allow FSH increases fertility accept contraception / contraceptive pill / morning after pill allow oestrogen decreases fertility accept progesterone affects uterus lining do not credit simply 'a hormone to increase fertility or a hormone to decrease fertility' do not credit 'pill' unqualified or injections do not accept just FSH or oestrogen or IVF with no effect stated	1 1
total			4

3469/F Q12

	answers	extra information	mark
(a)	asexual	mitosis is neutral	1
(b)	(body cell) nucleus <i>is</i> from body cell	no mark for just body cell – mark the explanation allow converse nucleus from egg cell is removed	1
	nucleus contains (genetic) information / instructions / chromosomes / genes / DNA / allele	do not credit ‘contains characteristics’	1
(c)	splitting apart (cells from clonal) embryo	do not credit ‘repeat process’	1
total			4

3469/F Q13

	answers	extra information	mark
(a)	burning fossil fuels / named fossil fuel (releases carbon dioxide)	do not allow – cars / factories / power stations (neutral)	1
	idea of due to deforestation less carbon dioxide is removed / less photosynthesis / less carbon stored in wood		1
	idea of due to deforestation carbon dioxide increases when trees are burned / decay / microbial respiration		1
(b)	any two from swollen stem stores water (for dry periods) reduced leaves / spines lose less water / less transpiration / less evaporation idea of long roots absorb water from deeper / more spread out in soil		2
total			5

3469/F Q14

	answers	extra information	mark
(a)(i)	Y or 2,8,8 or Argon or Ar	All correct gains 3 marks	3
(ii)	W or 2,5	3 correct gains 2 marks	
(iii)	X or 2,7 or fluorine or F	2 or 1 correct gains 1 mark	
(iv)	Z or 2,8,8,1 or potassium or K	N.B. number of ticks on script must equal number of marks	
(b)	1 and 2 (both needed)	do not credit if any other group listed 'transition metals' neutral allow alkali metals and alkali earth metals	1
total			4

3469/F Q15

	answers	extra information	mark
(a)	11	accept 10.5 – 11.5	1
(b)	ideas of increase / rises frequently / often energetically / violently		1 1 1
(c)	yeast killed	accept enzymes denatured / destroyed	1
total			5

3469/F Q16

	answers	extra information	mark
(a)	oval / ellipse		1
	Sun		1
(b)	X Tempel-Tuttle Y Encke Z Nenjmin	all three for 2 marks, any two or one for 1 mark	2
(c)	use of spaceships / probes /satellites use of radio telescopes	ideas of communication needed do not credit telescope ignore searches for conditions for life	1 1
total			6

3469/F Q17

	answers	extra information	mark
	beta alpha absorbed by paper or beta absorbed by aluminium allow beta can penetrate paper or gamma would affect all of film	allow beta <u>and</u> alpha second mark is linked to first i.e., cannot obtain second mark unless first mark is correct	1 1
total			2

3469/F Q18

	answers	extra information	mark
	(ultrasonic) waves or vibrations or oscillations in fluid	N.B. must mention fluid or liquid or water	1
	idea of shaking dirt particles off watch	allow cavitation / implosion of small bubbles	1
total			2

3469/F Q19

	answers	extra information	mark
(a)	any three from (concentration of) oxygen increases by 60 (units) (concentration of) carbon dioxide decreases by 6 units	allow oxygen more than doubles for 2 marks allow 'by a small amount' N.B. usually the first 2 marks will be for the change in oxygen and carbon dioxide. The third mark will be for a quantitative comment on one of these changes	3
(b)	plasma red (blood) cell / haemoglobin / oxyhaemoglobin		1 1
total			5

3469/F Q20

	answers	extra information	mark
(a)	needle at 0 needle to left of 0		1 1
(b)	any two from increase speed / pedal faster increase strength of magnet increase number of turns on coil / number of coils increase area of coil		2
total			4

TOTAL MARKS FOR PAPER = 90