

# GCSE

## Science: Double Award Modular

3468

## Paper 1F

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**3468/1F Q1**

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

**3468/1F Q2**

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

## 3468/1F Q3

	answers	extra information	mark
(a)	-220(°C)	accept without unit do <b>not</b> credit if no minus sign no tolerance allowed	1
(b)	iodine	<i>allow I or I<sub>2</sub></i>	1
(c)	increase <i>down (the groups)</i>	N.B. must be <b>one</b> 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 <b>or</b> 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 1
total			6

**3468/1F Q4**

	answers	extra information	mark
B	carbon monoxide  CO	accept carbon oxide do <b>not</b> credit carbon dioxide do <b>not</b> credit if any superscripts <b>or</b> subscripts used but accept C <sub>1</sub> O <sub>1</sub> accept OC do <b>not</b> credit if obviously lower case	1  1
C	water H <sub>2</sub> O	accept hydrogen oxide do not accept hydrogen hydroxide do <b>not</b> credit if obviously lower case <b>or</b> if 2 not subscript do <b>not</b> accept HOH accept OH <sub>2</sub>	1 1
D	ammonia NH <sub>3</sub>	do not accept ammonium do <b>not</b> credit if obviously lower case, <b>or</b> if 3 not subscript accept nitrogen hydride <b>or</b> hydrogen nitride do <b>not</b> accept hydrogen nitrate <b>or</b> nitrite allow H <sub>3</sub> N	1 1
total			6

**3468/1F Q5**

	answers	extra information	mark
	microwave – sending information to satellites	N.B. mark the left hand boxes by putting crosses on wrong <b>or</b> 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 <b>or</b> 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

**3468/1F 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 <b>or</b> dashed lines ignore any arrows  N.B. the rays must reach the eye	2
(b)	speed refraction transverse		1 1 1
total			5

**3468/1F Q7**

	answers	extra information	mark
(a)(i)	86		1
(ii)	222		1
(b)	<b>Quality of written communication</b> <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>  Any <b>three</b> from  radon releases (alpha) radiation  (radon <b>or</b> radiation causes) harm <b>or</b> damage to <u>body</u> <b>or</b> <u>cells</u>  idea that living near radiation over <u>long period</u> will lead to <u>large 'dose'</u> of radiation  radon (is a gas) <u>that can be breathed in</u>		1  1  1  1
total			5

**3468/1F Q8**

	answers	extra information	mark
(a)	all sectors correctly plotted – 2 marks one plotting error only – 1 mark 2 <b>or</b> 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		1
	breath		1
	amino acids		1
	urine		1
total			7

**3468/1F Q9**

	answers	extra information	mark
	low density	four ticks – max 2 marks	1
		five ticks – max 1 mark	
	form hydroxides that dissolve in water	all boxes ticked – 0 marks	1
	react quickly with water		1
total			3

**3468/1F Q10**

	answers	extra information	mark
	<u>small</u> intestine	must be in this order	1
	<u>large</u> intestine		1
	anus		1
total			3

**3468/1F 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 <b>not</b> credit simply 'a hormone to increase fertility <b>or</b> a hormone to decrease fertility' do <b>not</b> credit 'pill' unqualified <b>or</b> injections do <b>not</b> accept just FSH <b>or</b> oestrogen <b>or</b> IVF with no effect stated	1 1
total			4

**3468/1F 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 <b>not</b> credit 'contains characteristics'	1
(c)	splitting apart (cells from clonal) embryo	do <b>not</b> credit 'repeat process'	1
total			4

**3468/1F Q13**

	answers	extra information	mark
(a)	<b>Quality of written communication</b> <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>		
	idea of mutation <b>or</b> variation	do <b>not</b> allow 'bacteria get used to antibiotics' <b>or</b> idea that antibiotics change the bacteria <b>or</b> 'bacteria become immune' <b>or</b> references to adaptation or evolution	1
	(resistant cells) survive antibiotic		1
	(resistant cells) breed		1
(b)	<b>EITHER (yes)</b>  keep animals disease free (1) so grow faster (1 mark) <b>or</b> live longer  <b>OR (no)</b>  resistant bacteria may develop (1) risk to human <b>or</b> animal health (1)		2
		allow bacteria become resistant / immune	
total			5

**3468/1F Q14**

	answers	extra information	mark
(a)(i)	Y <b>or</b> 2,8,8 <b>or</b> Argon <b>or</b> Ar	All correct gains 3 marks	3
(ii)	W <b>or</b> 2,5	3 correct gains 2 marks	
(iii)	X <b>or</b> 2,7 <b>or</b> fluorine <b>or</b> F	2 or 1 correct gains 1 mark	
(iv)	Z <b>or</b> 2,8,8,1 <b>or</b> potassium <b>or</b> 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



**3468/1F Q15**

	answers	extra information	mark
(a)	8 electrons in outer shell	accept anywhere in outer shell accept dots or crosses	1
	negative sign outside bracket		1
(b)	liquid		1
	aqueous	accept dissolved in <u>water</u> / in solution in <u>water</u>	1
(c)(i)	$\text{Cl}_2(\text{aq}) + \underline{2} \text{KBr}(\text{aq}) \rightarrow \underline{2} \text{KCl}(\text{aq}) + \text{Br}_2(\text{aq})$	both '2s' needed accept $\frac{1}{2} \text{Cl}_2$ and $\frac{1}{2} \text{Br}_2$	1
(ii)	chlorine more reactive (than bromine)	do <b>not</b> credit higher up group allow 'higher up reactivity series' do <b>not</b> credit more reactive than an <u>incorrect</u> substance	1
total			6

**3468/1F Q16**

	answers	extra information	mark
(a)	any two successive peaks labelled <b>W</b>	accept any 2 points on same part of adjacent waves correct by eye	1
	half 'height' of wave labelled <b>A</b>	correct by eye N.B. at least one of the answers must be labelled	1
(b)	0.2	correct answer with no working = 2 allow 1 mark for $s = f \times w$ or correct working i.e., $2 \times 0.1$ N.B. correct answer from incorrectly recalled relationship = 0	2
	m/s (unit)	independent mark do <b>not</b> allow mps <b>or</b> mHz	1
total			5

**3468/1F Q17**

	answers	extra information	mark
	beta alpha absorbed by paper <b>or</b> beta absorbed by aluminium allow beta can penetrate paper <b>or</b> 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

**3468/1F Q18**

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

**3468/1F Q19**

	answers	extra information	mark
(a)	any <b>three</b> from  (concentration of) oxygen increases  by 60 (units)  (concentration of) carbon dioxide decreases  from 46 to 40 / 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

**3468/1F Q20**

	answers	extra information	mark
	sodium nitrate $\text{NaNO}_3$	do not credit lower case N <b>or</b> O, upper case A	1 1
	potassium sulphate $\text{K}_2\text{SO}_4$	accept potassium hydrogen sulphate <b>or</b> $\text{KHSO}_4$ do not credit lower case K, S or O ignore charges on ions	1 1
total			4

**TOTAL MARKS FOR PAPER = 90**