

**MARK SCHEME for the October/November 2011 question paper  
for the guidance of teachers**

**0608 TWENTY FIRST CENTURY SCIENCE**

**0608/03**

Paper 3 (Core Written), maximum raw mark 60

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes must be read in conjunction with the question papers and the report on the examination.

- Cambridge will not enter into discussions or correspondence in connection with these mark schemes.

Cambridge is publishing the mark schemes for the October/November 2011 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.

1	(a)	1 2	[2]	one mark for each correct number
	(b)	4 4 4 4	[2]	one mark for each correct row (left to right) allow one mark if first row incorrect but repeated in second row
	(c)	carbon / carbon monoxide	[1]	
		<b>Total</b>	<b>[5]</b>	
2	(a)	ticks in boxes 1, 2, 3 and 5	[3]	all 4 correct boxes ticked = 3 marks 3 boxes = two marks 2 boxes = one mark 5 boxes ticked max 1 all 6 boxes ticked = 0
	(b)	grown oil more	[2]	3 correct = 2 marks 2 correct = 1 mark
	(c)	window frame would be too soft/floppy; glass may fall out	[2]	
	(d) (i)	sulfur dioxide; SO <sub>2</sub> / nitrogen dioxide NO <sub>2</sub>	[2]	1 mark for name, 1 mark for matching formula
	(ii)	corrodes statues etc / acidifies lakes / kills fish / kills trees	[1]	
		<b>Total</b>	<b>[10]</b>	
3	(a) (i)	too expensive / not available	[1]	
	(ii)	pick off by hand / crop rotation / natural predators	[1]	
	(iii)	reduced yield	[1]	
	(b) (i)	yield reduces / crops do not grow well	[1]	
	(ii)	manure / crop rotation / grow legumes	[1]	allow example of legume e.g. clover/beans/peas
		<b>Total</b>	<b>[5]</b>	

4	(a)	movement (1); evidence(1); geology (1)	[3]	
	(b)	mantle (1);	[1]	
	(c) (i)	F	[1]	
	(ii)	D	[1]	
	(iii)	A and E	[1]	need both and no others
		<b>Total</b>	<b>[7]</b>	
5	(a) (i)	microwave, ultraviolet, X-rays	[2]	all correct = 2 2 correct = 1
	(ii)	ticks in at least two of the three right-hand end boxes	[1]	any two of these and no tick for a non-ionising radiation for the mark accept any clear indication of choices.
	(b)	risk is small/ not certain there is any risk (1); any named benefit, e.g. convenience, phone access in emergency, having the latest gadget, prestige (1) benefit is greater than the risk (1)	[2]	any <b>two</b>
	(c)	<u>metal</u> walls/door screen <u>reflect</u> microwaves back into cavity	[1]	both metal and reflect (or block) needed
		<b>Total</b>	<b>[6]</b>	
6	(a) (i)	wind / wave / hydroelectric / geothermal / tidal	[1]	any reasonable renewable source other than biomass
	(ii)	coal once used is gone forever / cannot grow more coal (1);	[1]	
	(b) (i)	400	[1]	
	(ii)	200MJ heat energy used in factory / arrow for use in factory is half the total width	[1]	
	(iii)	$400 - 60 - 200 \text{ (MJ)} = 140 \text{ (MJ)}$	[1]	any clear indication of process e.g. 'It's the input take away the steam and the waste'
	(iv)	$140 \times 100/400 \text{ (1)}$ $= 35\% \text{ (1)}$	[2]	full marks for correct answer without working
		<b>Total</b>	<b>[7]</b>	

<b>7</b>	<b>(a)</b>	stem cells	[1]	
	<b>(b)</b>	unspecialised embryos unnatural	[3]	one mark for each correct word
	<b>(c)</b>	<b>(i)</b> A B C F	[1]	any two
		<b>(ii)</b> D E G	[1]	any two
	<b>(d)</b>	T F T T	[2]	all correct = 2 2/3 correct = 1 0/1 correct = 0
		<b>Total</b>	<b>[8]</b>	
<b>8</b>	<b>(a)</b>	influenza is caused by a virus; antibiotics kill bacteria / antibiotics cannot destroy viruses	[2]	
	<b>(b)</b>	<b>(i)</b> 'flu virus changes / mutates very quickly	[1]	
		<b>(ii)</b> antibodies	[1]	
	<b>(c)</b>	to ensure it is safe / effective / has no (serious) side effects	[1]	
	<b>(d)</b>	BC AE D	[2]	all 5 correct = 2 3 or 4 correct = 1
		<b>Total</b>	<b>[7]</b>	
<b>9</b>	<b>(a)</b>	<b>(i)</b> C	[1]	
		<b>(ii)</b> A	[1]	
		<b>(iii)</b> D	[1]	
		<b>(iv)</b> B	[1]	
	<b>(b)</b>	lowering blood sugar levels after a meal / raising of heart beat when frightened	[1]	allow any valid example
		<b>Total</b>	<b>[5]</b>	