



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

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**21<sup>ST</sup> CENTURY SCIENCE**

**0608/03**

Paper 3

**For Examination from 2009**

SPECIMEN MARK SCHEME

**1 hour 30 minutes**

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**MAXIMUM MARK: 60**

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This document consists of **4** printed pages.



Question		Gd	Expected Answers	Mks	Additional Guidance
1	(a) (i)	G	sulfur	1	
	(ii)	FE	oxygen; water;	1 1	
(b)	(i) *	C	as a control / for comparison	1	
	(ii)	G	increases	1	
(c)	(i) *	D	to increase reliability / to account for outliers / in case of a mistake / in case conditions changed	1	
	(ii)	E	8 to 10	1	
2	(a)	G	It can be separated into useful materials for the chemical industry.	1	
	(b)	G	polymerisation	1	
	(c) (i)	FE	A and C	2	
	(ii) *	DDC	old material consistent with named article; new material consistent with named article; sensible advantage;	1 1 1	
3	(a) (i)	FE	carbon; hydrogen	1 1	
	(ii) *	DC	crops take nitrogen (compounds) out of the ground/soil; the crops are removed / nitrogen is not returned to the ground/soil;	1 1	
	(iii)	E	reduces rainfall	1	
	(b)	G	fertilisers contain nitrogen (compounds) / fertilisers replace the nitrogen	1	
4	(a) (i)	GF	XX; XY	1 1	
	(ii)	GF	boy, girl, boy all three correct for 2 marks, 2 correct for 1 mark; allow ecf from (a)(i)	2	
	(b)	FEE	protein; alleles; carriers;	1 1 1	

5	(a)	*	DC	fat builds up in coronary arteries / coronary arteries become blocked; blood supply to heart muscle is prevented / heart muscle does not get oxygen / heart muscle dies;	1 1	
	(b)	*	DC	number of people with heart disease increases with time; number of people with heart disease increases with increase in gum disease;	1 1	
6	(c) (i)	*	CC	Melvin next to box 2; Harry next to box 1;	1 1	
	(ii)	*	D	obesity / smoking / lack of exercise	1	
7	(a)		GF	pterodactyl, woolly mammoth, giant moa, polynesian tree snail all four in correct order for 2 marks any three in correct order for 1 mark	2	
	(b)		F	giant moa and polynesian tree snail	1	
	(c)		FE	competition for food; competition for space; carried disease;	2	Any two
	(d)		G	theory	1	
7		*	CCD	each used the best knowledge available at the time; Hutton used data which showed Ussher was wrong; Thomson gave dates based on a molten planet cooling down; Rutherford used new data/techniques to improve Kelvin's date; More modern methods give even greater age for Earth;	3	Any three
8	(a) (i)		EG	remained steady; increased;	1 1	
	(ii)		EG	fossil fuels burned; producing carbon dioxide;	1 1	
	(b)		FE	increased; varied;	1 1	
	(c)	*	CDD	graphs show a correlation; graphs do not show that increase in temperature is caused by increase in carbon dioxide; for cause need a mechanism;	1 1 1	

<b>(d)</b>	<b>(i)</b>	F	ice caps melt / water expands as gets hotter	1	
	<b>(ii)</b>	E	low-lying land floods	1	
<b>9</b>	<b>(a)</b>	FG	alpha; beta;	1 1	either order
	<b>(b)</b>	E	kill micro-organisms / ionising / penetrating / will go through (some) materials	1	
	<b>(c)</b>	E	to protect workers / to stop radiation leaking	1	
	<b>(d)</b>	*	DC time taken for activity/amount of radioactive substance; to fall to half or its (original) value;	1 1	