

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

MARK SCHEME for the May/June 2010 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.

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

CIE is publishing the mark schemes for the May/June 2010 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.

Page 2	Mark Scheme: Teachers' version	Syllabus
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Expected Answers		Mks	Additional Guidance
1 (a) (i)	4	[1]	
(ii)	it would make the mean a poor best estimate/answer would be too small	[1]	
(iii)	it gives a more reliable best estimate; it allows outliers to be found and ignored; one sample may be faulty; one experiment may be in error;	[2]	Any two
(b) (i)	65 to 68	[1]	Allow 68 to 65
(ii)	$68 + 65 + 66 + 66 + 65 / 5$; 66;	[2]	
Total		[7]	

Expected Answers		Mks	Additional Guidance
2 (a)		[2]	All three correct for two marks Two correct for one mark Two lines to or from one box negates that box
(b) (i)	5	[1]	
(ii)	4	[1]	
(c)	photosynthesis; dissolving in rain/seas;	[2]	
Total		[6]	

Page 3	Mark Scheme: Teachers' version	Syllabus
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Expected Answers		Mks	Additional Guidance
3 (a)	crops remove nitrogen from soil; this is not put back/there is no longer enough nitrogen;	[2]	
(b)	abandoned areas cannot be used again; eventually all of forest is used up/trees will not grow back as they were;	[2]	
(c)	manure/clover/crop rotation	[1]	
(d)	developed spray with pesticides/developing use natural methods to remove pests; pesticides are more effective than natural methods/developing cannot afford pesticides/do not have pesticides available;	[2]	
Total		[7]	

Expected Answers		Mks	Additional Guidance
4 (a) (i)	asteroid Moon Earth Sun	[2]	All correct for two marks; two in correct positions for one
(ii)	dust <u>and</u> gas	[1]	Either order
(b)	clouds of dust produced (1); blocked out Sun's radiation (for a long time) (1); cooled Earth below temperature at which they could survive (1); plants to feed (some of) them died due to darkness (1);	[2]	Any two points. Ignore any strictly local effects, e.g. blast
(c)	asteroid crashed long before death of dinosaurs	[1]	Any indication of clearly picking the second statement in the speech bubble.
Total		[6]	

Page 4	Mark Scheme: Teachers' version	Syllabus
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Expected Answers		Mks	Additional Guidance
5 (a)	ultraviolet is ionising (1); can damage cells/make them cancerous/cause cancer(1);	[2]	
(b)	absorbed (1) by ozone (layer) (1)	[2]	
(c) (i)	Abby, Barry and Carl	[2]	All three correct for two marks. Any two correct and NOT Dana for one mark.
(ii)	Abby and Barry	[1]	Both required
Total		[7]	

Expected Answers		Mks	Additional Guidance
6 (a)	coal, gas and oil	[2]	All three (in any order) for two marks. At least two for one mark. Deduct one mark for each other fuel in list.
(b)	Oil	[1]	
(c)	475	[1]	
(d)	coal, gas and oil	[2]	All three (in any order) for two marks. At least two for one mark. Deduct one mark for each other fuel in list.
(e)	wind/wave/geothermal/biomass/solar	[1]	
Total		[7]	

Page 5	Mark Scheme: Teachers' version	Syllabus
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Expected Answers		Mks	Additional Guidance															
7 (a)	<table border="1"> <thead> <tr> <th></th> <th>T or F</th> </tr> </thead> <tbody> <tr> <td>each pair of chromosomes contains one chromosome from each parent</td> <td>T</td> </tr> <tr> <td>genes are instructions for a cell that describe how to make protein</td> <td>T</td> </tr> <tr> <td>chromosomes are found in the nucleus of cells</td> <td>T</td> </tr> <tr> <td>chromosomes in human sex cells are found in pairs</td> <td>F</td> </tr> <tr> <td>genes are instructions for a cell that describe how to make DNA</td> <td>F</td> </tr> </tbody> </table>		T or F	each pair of chromosomes contains one chromosome from each parent	T	genes are instructions for a cell that describe how to make protein	T	chromosomes are found in the nucleus of cells	T	chromosomes in human sex cells are found in pairs	F	genes are instructions for a cell that describe how to make DNA	F	[3]	All correct = 3 4/3 correct = 2 2/1 correct = 1			
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(b)	<table border="1"> <tr> <td colspan="2"></td> <td colspan="2">MOTHER</td> </tr> <tr> <td colspan="2"></td> <td>X</td> <td>X</td> </tr> <tr> <td rowspan="2">FATHER</td> <td>X</td> <td>XX</td> <td>XX</td> </tr> <tr> <td>Y</td> <td>XY</td> <td>XY</td> </tr> </table>			MOTHER				X	X	FATHER	X	XX	XX	Y	XY	XY	[2]	One mark for parent genotypes One mark for correct outcomes (allow ecf from incorrect parent genotypes)
		MOTHER																
		X	X															
FATHER	X	XX	XX															
	Y	XY	XY															
(c) (i)	Badr/Amir	[1]	Either															
(ii)	Dao	[1]																
(iii)	Ellen	[1]																
Total		[8]																

Page 6	Mark Scheme: Teachers' version	Syllabus
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Expected Answers		Mks	Additional Guidance								
8 (a)	<table border="1"> <thead> <tr> <th>word</th> <th>description</th> </tr> </thead> <tbody> <tr> <td>bacteria</td> <td>provides protection from microorganisms before infection</td> </tr> <tr> <td>antibody</td> <td>made by white cells in the body to help destroy microorganisms</td> </tr> <tr> <td>vaccination</td> <td>a type of microorganism</td> </tr> </tbody> </table>	word	description	bacteria	provides protection from microorganisms before infection	antibody	made by white cells in the body to help destroy microorganisms	vaccination	a type of microorganism	[2]	3 lines correct = 2 2 lines correct = 1 1 line correct = 0
word	description										
bacteria	provides protection from microorganisms before infection										
antibody	made by white cells in the body to help destroy microorganisms										
vaccination	a type of microorganism										
(b)	a chemical; can kill bacteria/fungi;	[2]									
(c)	to prevent bacteria becoming <u>resistant</u>	[1]									
(d) (i)	60%	[1]									
(ii)	increased	[1]									
Total		[7]									

Expected Answers		Mks	Additional Guidance																				
9 (a)	nervous is electrical whereas hormone is chemical; nervous is faster than hormonal/ora; nervous has shorter lived response/ora;	[2]	Any two																				
(b)	<table border="1"> <thead> <tr> <th>observation</th> <th>agrees</th> <th>disagrees</th> <th>does not</th> </tr> </thead> <tbody> <tr> <td>apes have small brains and cannot walk upright</td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>hominids had small brains and could walk upright</td> <td></td> <td>✓</td> <td></td> </tr> <tr> <td>humans and apes have a common ancestor</td> <td></td> <td></td> <td>✓</td> </tr> <tr> <td>humans have large brains and can walk upright</td> <td>✓</td> <td></td> <td></td> </tr> </tbody> </table>	observation	agrees	disagrees	does not	apes have small brains and cannot walk upright	✓			hominids had small brains and could walk upright		✓		humans and apes have a common ancestor			✓	humans have large brains and can walk upright	✓			[3]	Four correct = 3 Three correct = 2 Two correct = 1
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Total		[5]																					