OCR
RECOGNISING ACHIEVEMENT

GCSE

Science A

General Certificate of Secondary Education

Unit **A211/01:** Unit 1: Modules B1, C1, P1 (Foundation Tier)

Mark Scheme for January 2012

OCR (Oxford Cambridge and RSA) is a leading UK awarding body, providing a wide range of qualifications to meet the needs of candidates of all ages and abilities. OCR qualifications include AS/A Levels, Diplomas, GCSEs, OCR Nationals, Functional Skills, Key Skills, Entry Level qualifications, NVQs and vocational qualifications in areas such as IT, business, languages, teaching/training, administration and secretarial skills.

It is also responsible for developing new specifications to meet national requirements and the needs of students and teachers. OCR is a not-for-profit organisation; any surplus made is invested back into the establishment to help towards the development of qualifications and support, which keep pace with the changing needs of today's society.

This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which marks were awarded by examiners. It does not indicate the details of the discussions which took place at an examiners' meeting before marking commenced.

All examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

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

OCR will not enter into any discussion or correspondence in connection with this mark scheme.

Any enquiries about publications should be addressed to:

OCR Publications
PO Box 5050
Annesley
NOTTINGHAM
NG15 0DL

Telephone: 0870 770 6622
Facsimile: 01223 552610
E-mail: publications@ocr.org.uk

Annotations

Used in the detailed Mark Scheme:

Annotation	Meaning
/	alternative and acceptable answers for the same marking point
(1)	separates marking points
not/reject	answers which are not worthy of credit
ignore	statements which are irrelevant - applies to neutral answers
allow/accept	answers that can be accepted
(words)	words which are not essential to gain credit
words	underlined words must be present in answer to score a mark
ecf	error carried forward
AW/owtte	alternative wording
ORA	or reverse argument

Available in scoris to annotate scripts

	indicate uncertainty or ambiguity
	benefit of doubt
	contradiction
	incorrect response
	error carried forward
	draw attention to particular part of candidate's response
	draw attention to particular part of candidate's response
	draw attention to particular part of candidate's response
	no benefit of doubt

	reject
	correct response
	draw attention to particular part of candidate's response
	information omitted

Subject-specific Marking Instructions

a. If a candidate alters his/her response, examiners should accept the alteration.

b. Crossed out answers should be considered only if no other response has been made. When marking crossed out responses, accept correct answers which are clear and unambiguous.

E.g.

For a one mark question, where ticks in boxes 3 and 4 are required for the mark:

Put ticks (✓) in the two correct boxes.	Put ticks (✓) in the two correct boxes.	Put ticks (✓) in the two correct boxes.
☐	☐	☒
☐	☐	☒
☒	☑	☑
☒	☒	☑
☐	☐	☐
This would be worth 1 mark.	This would be worth 0 marks.	This would be worth 1 mark.

c. The list principle:
If a list of responses greater than the number requested is given, work through the list from the beginning. Award one mark for each correct response, ignore any neutral response, and deduct one mark for any incorrect response, e.g. one which has an error of science. If the number of incorrect responses is equal to or greater than the number of correct responses, no marks are awarded. A neutral response is correct but irrelevant to the question.

d. Marking method for tick boxes:

Always check the additional guidance.

If there is a set of boxes, some of which should be ticked and others left empty, then judge the entire set of boxes.
If there is at least one tick, ignore crosses. If there are no ticks, accept clear, unambiguous indications, e.g. shading or crosses.
Credit should be given for each box correctly ticked. If more boxes are ticked than there are correct answers, then deduct one mark for each additional tick. Candidates cannot score less than zero marks.

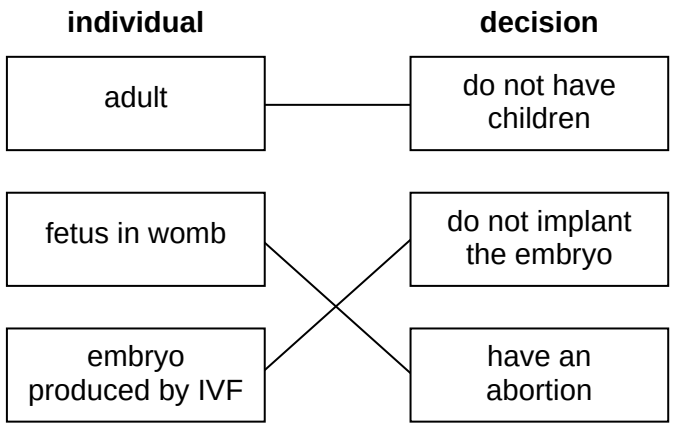
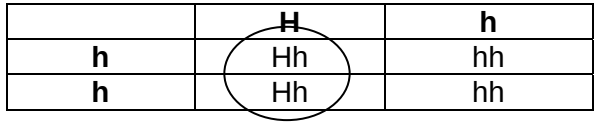
E.g. If a question requires candidates to identify a city in England, then in the boxes

Edinburgh	
Manchester	
Paris	
Southampton	

the second and fourth boxes should have ticks (or other clear indication of choice) and the first and third <u>should be blank</u> (or have indication of choice crossed out).

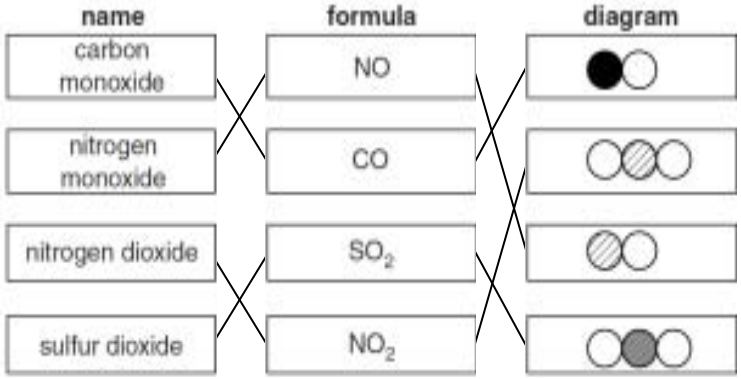
Edinburgh			✓			✓	✓	✓	✓	
Manchester	✓	×	✓	✓	✓				✓	
Paris				✓	✓		✓	✓	✓	
Southampton	✓	×		✓		✓	✓		✓	
Score:	**2**	**2**	**1**	**1**	**1**	**1**	**0**	**0**	**0**	**NR**

Question			Answer	Marks	Guidance
1	(a)		<table><tr><td>a pair of chromosomes</td><td></td></tr><tr><td>a code for making DNA</td><td></td></tr><tr><td>a short section of protein</td><td></td></tr><tr><td>an instruction for making a protein</td><td>✓</td></tr></table>	1	
	(b)		**any three from:** may have religious objections to testing/test unnatural (1) may not want to worry (family)/scared of results (1) may not want insurers to know (1) may not want employers to know (1) test may be a false positive or false negative (1) don't want to change lifestyle/want to get on with life (1) environment also affects chances of disease (1) can change lifestyle/avoid environmental risk factors (eg decrease eating fatty food/increase exercise)/ early treatment/delay onset/make preparations/find cure (1) hereditary considerations (e.g. passing on to children/family member may have disease/determine parentage) (1) may/may not want to help solve a crime (1)	3	**accept** it is too expensive/waste of money/waste of time; **accept** worried about side effects/possible miscarriage **accept** want to find out (result)/don't want to know (result)
			Total	**4**	

Question			Answer	Marks	Guidance
2	(a)			2	all three correct = 2 marks one or two correct = 1 mark
	(b)	(i)		1	one mark for all alleles correct **accept** hH for Hh
		(ii)	circle round both Hh as shown in (b)(i)/separate circles around both Hh	1	**allow** ecf from bi (i.e. circle or circles around ALL combinations of 2 alleles with at least one H)
	(c)		circle round 7440	1	
			Total	**5**	

Question			Answer	Marks	Guidance
3	(a)		<table><tr><td>They have the same number of…</td><td></td></tr><tr><td>They have the same mother and…</td><td></td></tr><tr><td>They developed from a single…</td><td>✓</td></tr><tr><td>They developed from two identical…</td><td></td></tr></table>	1	
	(b)		<table><tr><td>eye colour</td><td></td></tr><tr><td>blood group</td><td></td></tr><tr><td>weight</td><td>✓</td></tr><tr><td>scars</td><td>✓</td></tr></table>	1	
			Total	**2**	

Question			Answer	Marks	Guidance
4	(a)		they can develop into any kind of cell (1)	1	
	(b)	(i)	Jon (1)	1	
		(ii)	Philip (1)	1	
			Total	**3**	

Question			Answer	Marks	Guidance
5	(a)		78% nitrogen and 21% oxygen;(1) 1% argon;(1)	2	**allow** chemical symbols N, O, Ar. Ignore any spelling errors as long as the meaning is clear. **accept** 'argon and other gases' or 'argon and noble gases' for 1%
	(b)	(i)		3	mark lines across from name to formula to diagram. all 4 lines correct = 3 marks 3 lines correct = 2 marks 2 lines correct = 1 mark
		(ii)	**any three from:** dissolves / reacts / mixes / combines with rain / water / moisture/ clouds; (forms) acid rain; damages metal / stone; harms / kills plants / animals / fish;	3	 **accept** buildings/statues for stone and destroys for damages but not breaks **ignore** destroys plants etc **ignore** effects on humans/global warming
			Total	**8**	

Question			Answer	Marks	Guidance
6	(a)	(i)	ring around 4 in table in the evening column	1	
		(ii)	(10+12+15+8+10)÷5 (1) =11 (1)	2	attempt to calculate a mean (adding up some values and dividing by how many values were used, even if the values are not correct) = 1 mark correct answer with or without working = 2 marks
		(iii)	58 to 71	1	**accept** 71 to 58
	(b)		(levels of) particulates high in the afternoon; (1) (levels of) particulates low in the morning; (1) (levels of) particulates higher in the afternoon (than the morning) ORA; (2)	2	**accept** particulates increased (in the afternoon) (2)
			Total	**6**	

Question			Answer	Marks	Guidance
7	(a)		Anna: ; Brian: ; Chandra: ; Daniel: ✓	1	
	(b)		Anna: ; Brian: ; Chandra: ✓ ; Daniel:	1	
	(c)		Anna: ✓ ; Brian: ; Chandra: ; Daniel:	1	
	(d)		Anna: ✓ ; Brian: ; Chandra: ; Daniel: ✓	1	
			Total	**4**	

<table>
<tr><th colspan="3">Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>8</td><td>(a)</td><td></td><td>CAED(B)</td><td>2</td><td>CA as order of first two (1);
ED as order of last two (1)

allow CEAD(B) for 1 mark</td></tr>
<tr><td></td><td>(b)</td><td></td><td><table>
<tr><td>Earth</td><td>Universe</td><td>Sub</td><td></td></tr>
<tr><td>Sun</td><td>Universe</td><td>Earth</td><td></td></tr>
<tr><td>Universe</td><td>Sun</td><td>Earth</td><td>✓</td></tr>
<tr><td>Universe</td><td>Earth</td><td>Sun</td><td></td></tr>
</table></td><td>1</td><td></td></tr>
<tr><td></td><td></td><td></td><td>Total</td><td>3</td><td></td></tr>
</table>

<table>
<tr><th colspan="3">Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>9</td><td></td><td></td><td>
<table>
<tr><th>evidence</th><th>change shown</th></tr>
<tr><td>erosion /cliffs / shape of rocks / displaced rocks</td><td>mountains / cliffs / rocks have been worn down/made smaller / eroded</td></tr>
<tr><td>layers in (sedimentary) rocks</td><td>from build-up of sediments (on sea floors) / sedimentation</td></tr>
<tr><td>magnetic stripes on seafloor</td><td>spread of seafloor/changes in Earth’s magnetic field</td></tr>
<tr><td>similar rock layers / types in different continents / matching shapes</td><td>must have been once joined / continents moved / plates moved</td></tr>
<tr><td>crystal size / rock types</td><td>temperature changes / cooling / heating</td></tr>
<tr><td>fossils</td><td>plants and animals buried or climatic change or evolution or extinctions or continental drift</td></tr>
<tr><td>folding</td><td>(sedimentary) rocks changed by Earth movements</td></tr>
<tr><td>radioactivity</td><td>isotopes decay</td></tr>
<tr><td>craters</td><td>asteroid impacts (in the past)</td></tr>
</table>
</td><td>2</td><td>one mark for example of evidence, and one for change

allow older rocks under younger rocks etc for rock layers

allow countries moved

ignore age of rocks

ignore dating of rocks</td></tr>
<tr><td></td><td></td><td></td><td>Total</td><td>2</td><td></td></tr>
</table>

Question			Answer	Marks	Guidance
10			idea of immensity of Universe (1); (very) many planets (1); possibility of life arising has many chances (1)	3	**accept** many galaxies/many stars
			Total	**3**	

Question			Answer	Marks	Guidance
11	(a)		Earthquakes: ; Light Pollution: ✓; Sunlight: ; Tides:	1	
	(b)		bouncing laser beams off the star: ; comparing the brightness of the stars: ✓; sending a rocket to the star: ; using parallax: ✓	1	both needed
			Total	**2**	

OCR (Oxford Cambridge and RSA Examinations)
1 Hills Road
Cambridge
CB1 2EU

OCR Customer Contact Centre

Education and Learning
Telephone: 01223 553998
Facsimile: 01223 552627
Email: general.qualifications@ocr.org.uk

www.ocr.org.uk

For staff training purposes and as part of our quality assurance programme your call may be recorded or monitored

Oxford Cambridge and RSA Examinations
is a Company Limited by Guarantee
Registered in England
Registered Office; 1 Hills Road, Cambridge, CB1 2EU
Registered Company Number: 3484466
OCR is an exempt Charity

OCR (Oxford Cambridge and RSA Examinations)
Head office
Telephone: 01223 552552
Facsimile: 01223 552553