



# GCSE

## Science A

General Certificate of Secondary Education

Unit **A212/01**: Unit 2: Modules B2, C2, P2 (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.

© OCR 2012

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](mailto:publications@ocr.org.uk)

A212/01

Mark Scheme










January 2012





**Annotations**

Used in the detailed Mark Scheme:

Annotation	Meaning
/	alternative and acceptable answers for the same marking point
(1)	separates marking points
<b>not/reject</b>	answers which are not worthy of credit
<b>ignore</b>	statements which are irrelevant - applies to neutral answers
<b>allow/accept</b>	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

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

✗
✗

This would be worth 1 mark.

Put ticks (✓) in the two correct boxes.

✓
✗

This would be worth 0 marks.

Put ticks (✓) in the two correct boxes.

✗
✗
✓
✓

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

<b>Edinburgh</b>	
<b>Manchester</b>	
<b>Paris</b>	
<b>Southampton</b>	

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

<b>Edinburgh</b>			✓			✓	✓	✓	✓	
<b>Manchester</b>	✓	x	✓	✓	✓				✓	
<b>Paris</b>				✓	✓		✓	✓	✓	
<b>Southampton</b>	✓	x		✓		✓	✓		✓	
<b>Score:</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>NR</b>

A212/01

Mark Scheme

January 2012

Question			Answer	Mark	Guidance												
1	(a)	(i)	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div> <div>(2)</div>	2	3 lines correct = 2 marks 1 or 2 lines correct = 1 mark												
		(ii)	<table><tr><td>Plastic is a renewable resource</td><td></td></tr><tr><td>Most plastics melt when heated</td><td></td></tr><tr><td>Plastic chairs are not as heavy</td><td>✓</td></tr></table> <div>(1)</div>	Plastic is a renewable resource		Most plastics melt when heated		Plastic chairs are not as heavy	✓	1	one correct tick = 1 mark more than one tick = 0 marks						
Plastic is a renewable resource																	
Most plastics melt when heated																	
Plastic chairs are not as heavy	✓																
	(b)		<table><tr><td>Wooden chairs rot faster than plastic ones</td><td>✓</td><td rowspan="2">(1)</td></tr><tr><td>Chairs made from wood look better than those made from plastic</td><td></td></tr><tr><td>Plastic chairs bend more than wooden ones</td><td></td><td rowspan="3">(1)</td></tr><tr><td>Wood comes from trees and plastic from crude oil</td><td>✓</td></tr><tr><td>Wooden chairs are more expensive than plastic ones</td><td></td></tr></table>	Wooden chairs rot faster than plastic ones	✓	(1)	Chairs made from wood look better than those made from plastic		Plastic chairs bend more than wooden ones		(1)	Wood comes from trees and plastic from crude oil	✓	Wooden chairs are more expensive than plastic ones		2	two correct ticks = 2 marks one correct tick plus one incorrect = 1 mark three ticks = max 1 mark four or more ticks = 0 marks
Wooden chairs rot faster than plastic ones	✓	(1)															
Chairs made from wood look better than those made from plastic																	
Plastic chairs bend more than wooden ones		(1)															
Wood comes from trees and plastic from crude oil	✓																
Wooden chairs are more expensive than plastic ones																	
	(c)	(i)	<div>similarity:</div> <div>contain (only) C and H atoms / hydrocarbons (1)</div> <div>difference:</div> <div>are different sizes / different lengths / some branched / different molecular structures (1)</div>	2													
		(ii)	(small molecules/monomers) joined together (1) to make polymer / long molecules / chains (1)	2	polymerisation with no explanation = 1 mark												
			Total	9													

A212/01

Mark Scheme

January 2012

Question			Answer	Mark	Guidance
2	(a)			3	all 4 correct = 3 marks 3 correct = 2 marks 2 correct = 1 mark 1 correct = 0 marks
	(b)		bigger than (1) more difficult (1)	2	
			<b>Total</b>	<b>5</b>	

A212/01

Mark Scheme

January 2012

Question			Answer	Mark	Guidance
3	(a)		Amy <input checked="" type="checkbox"/> (1)	2	two correct ticks = 2 marks one correct tick plus one incorrect = 1 mark three ticks = max 1 mark four or more ticks = 0 marks
		Betty <input type="checkbox"/>			
		Clive <input checked="" type="checkbox"/> (1)			
		David <input type="checkbox"/>			
		Erica <input type="checkbox"/>			
	(b)		Amy <input type="checkbox"/>	1	one correct tick = 1 mark more than one tick = 0 marks
Betty <input checked="" type="checkbox"/> (1)					
Clive <input type="checkbox"/>					
David <input type="checkbox"/>					
Erica <input type="checkbox"/>					
	(c)		Amy <input type="checkbox"/>	1	one correct tick = 1 mark more than one tick = 0 marks
Betty <input type="checkbox"/>					
Clive <input type="checkbox"/>					
David <input checked="" type="checkbox"/> (1)					
Erica <input type="checkbox"/>					
			Total	4	



A212/01

Mark Scheme

January 2012

Question			Answer	Mark	Guidance
4			burning fossil fuels/any correct example, e.g. driving cars (1) releases CO <sub>2</sub> (into atmosphere) (1)  <b>OR</b> deforestation/cutting down trees (1) stops CO <sub>2</sub> being taken in by trees (1)	2	<b>allow</b> idea of burning rubbish/waste
			<b>Total</b>	<b>2</b>	

Question			Answer	Mark	Guidance
5			photons (1) high energy (1) absorbs (1)	3	
			<b>Total</b>	<b>3</b>	

Question			Answer	Mark	Guidance
6			<b>any three from:</b> plants take in CO <sub>2</sub> (to make food); by photosynthesis; animals (and plants) release CO <sub>2</sub> ; from respiration (1)	3	<b>ignore</b> refs to oxygen
			<b>Total</b>	<b>3</b>	

Question			Answer	Mark	Guidance
7			microwaves (1)      light (1)	2	<b>must</b> be in correct order
			<b>Total</b>	<b>2</b>	

A212/01

Mark Scheme

January 2012

Question			Answer	Mark	Guidance								
8	(a)		<table><tr><td>It was carried out in the Netherlands</td><td></td></tr><tr><td>The scientists they used a control group to ....test</td><td>✓</td></tr><tr><td>The scientists studied drinking tea and 40 000 people were studied</td><td>✓</td></tr></table> (1) (1)	It was carried out in the Netherlands		The scientists they used a control group to ....test	✓	The scientists studied drinking tea and 40 000 people were studied	✓	2	two correct ticks = 2 marks one correct tick plus one incorrect = 1 mark three or more ticks = 0 marks		
It was carried out in the Netherlands													
The scientists they used a control group to ....test	✓												
The scientists studied drinking tea and 40 000 people were studied	✓												
	(b)		<b>any two from:</b> study checked/repeated;  ref. to other scientists (checking/repeating etc.); to make sure study is valid/reliable (2)	2	<b>allow</b> specific ref to method/results/conclusion being checked <b>do not allow</b> proof-read/review								
	(c)		<table><tr><td>...a vein carrying blood to the heart</td><td></td></tr><tr><td>...an artery carrying blood to the heart</td><td>✓</td></tr><tr><td>...a vein carrying blood away from the heart</td><td></td></tr><tr><td>...an artery carrying blood away from the heart</td><td></td></tr></table> (1)	...a vein carrying blood to the heart		...an artery carrying blood to the heart	✓	...a vein carrying blood away from the heart		...an artery carrying blood away from the heart		1	one correct tick = 1 mark more than one tick = 0 marks
...a vein carrying blood to the heart													
...an artery carrying blood to the heart	✓												
...a vein carrying blood away from the heart													
...an artery carrying blood away from the heart													
	(d)		B (1)	1									
	(e)		<b>any three from:</b> high fat diet;  high salt diet; obesity/overweight; lack of exercise; stress; drinking (alcohol) (1)	1	any three = 1 mark  <b>allow</b> eating fatty food/eating too much fat <b>ignore</b> junk food/bad diet/unhealthy diet/unbalanced diet  <b>do not allow</b> exercise unqualified  <b>ignore</b> smoking <b>ignore</b> ref to drugs <b>do not allow</b> genetics/inherited								
			Total	7									

A212/01

Mark Scheme

January 2012

Question			Answer	Mark	Guidance										
9	(a)		<table><tr><td>...can reproduce asexually</td><td></td></tr><tr><td>...contain antibodies</td><td></td></tr><tr><td>...produce poisons</td><td>✓</td></tr><tr><td>...are very small</td><td></td></tr><tr><td>...can damage cells</td><td>✓</td></tr></table> <p>(1)</p>	...can reproduce asexually		...contain antibodies		...produce poisons	✓	...are very small		...can damage cells	✓	1	two correct ticks = 1 mark one correct tick plus one incorrect = 0 marks three or more ticks = 0 marks
...can reproduce asexually															
...contain antibodies															
...produce poisons	✓														
...are very small															
...can damage cells	✓														
	(b)		<table><tr><td>Antibiotics do not kill viruses.</td><td>✓</td></tr><tr><td>Using antibiotics unnecessarily...</td><td>✓</td></tr><tr><td>Using antibiotics will make the...</td><td></td></tr><tr><td>Antibiotics encourage bacterial...</td><td></td></tr></table> <p>(1)</p>	Antibiotics do not kill viruses.	✓	Using antibiotics unnecessarily...	✓	Using antibiotics will make the...		Antibiotics encourage bacterial...		1	two correct ticks = 1 mark one correct tick plus one incorrect = 0 marks three or more ticks = 0 marks		
Antibiotics do not kill viruses.	✓														
Using antibiotics unnecessarily...	✓														
Using antibiotics will make the...															
Antibiotics encourage bacterial...															
	(c)		<p><b>any three from:</b> (vaccination) prevents daughter getting measles;  reduces risk of infection spreading (to others) / fewer people suffer from measles / makes an epidemic less likely;  side effects (of vaccination) milder than getting measles / idea that the benefit of having the vaccination outweighs the risk;  (vaccinating child) encourages/promotes others to do the same (1)</p>	3	<b>allow</b> reverse argument throughout										

A212/01

Mark Scheme

January 2012

Question			Answer	Mark	Guidance
9	(d)		... causes white blood cells to make...	2	two correct ticks = 2 marks one correct tick plus one incorrect = 1 mark three ticks = max 1 mark four or more ticks = 0 marks
			... contains white blood cells.		
			... contains antibodies.		
			... causes white blood cells to make... ✓ (1)		
			... contains a safe form of the... ✓ (1)		
			... acts as a barrier stopping the...		
			<b>Total</b>	<b>7</b>	

**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](mailto:general.qualifications@ocr.org.uk)

**[www.ocr.org.uk](http://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**

© OCR 2012

