

Chemistry A

General Certificate of Secondary Education **A321/01**

Unit 1: Modules C1, C2, C3 (Foundation Tier)

Mark Scheme for June 2010

OCR (Oxford Cambridge and RSA) is a leading UK awarding body, providing a wide range of qualifications to meet the needs of pupils 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 2010

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

Guidance for Examiners

Additional Guidance within any mark scheme takes precedence over the following guidance.

1. Mark strictly to the mark scheme.
2. Make no deductions for wrong work after an acceptable answer unless the mark scheme says otherwise.
3. Accept any clear, unambiguous response which is correct, e.g. mis-spellings if phonetically correct (but check additional guidance).
4. Abbreviations, annotations and conventions used in the detailed mark scheme:

/	= 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
<u>words</u>	= underlined words must be present in answer to score a mark
ecf	= error carried forward
AW/owtte	= alternative wording
ORA	= or reverse argument

E.g. mark scheme shows 'work done in lifting / (change in) gravitational potential energy' (1)

work done = 0 marks
 work done lifting = 1 mark
 change in potential energy = 0 marks
 gravitational potential energy = 1 mark

5. Annotations:
The following annotations are available on SCORIS.

✓	= correct response
✗	= incorrect response
bod	= benefit of the doubt
nbod	= benefit of the doubt not given
ECF	= error carried forward
^	= information omitted
I	= ignore
R	= reject

6. If a candidate alters his/her response, examiners should accept the alteration.
7. 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.

<input type="checkbox"/>
<input type="checkbox"/>
<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
<input type="checkbox"/>

This would be worth 0 marks.

Put ticks (✓) in the two correct boxes.

<input type="checkbox"/>
<input type="checkbox"/>
<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
<input type="checkbox"/>

This would be worth one mark.

Put ticks (✓) in the two correct boxes.

<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
<input type="checkbox"/>

This would be worth one mark.

8. 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.

9. 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 should be blank (or have indication of choice crossed out).

Edinburgh			✓			✓	✓	✓	✓	
Manchester	✓	x	✓	✓	✓				✓	
Paris				✓	✓		✓	✓	✓	
Southampton	✓	x		✓		✓	✓		✓	
Score:	2	2	1	1	1	1	0	0	0	NR

Question			Expected Answers	Marks	Additional Guidance
1	a	i	gases breathed out by animals <input type="checkbox"/> the burning of fuels ... <input checked="" type="checkbox"/> (1) the spreading of fertiliser ... <input type="checkbox"/>	[1]	
		ii	oxygen (1) water (1)	[2]	
		iii	nitrogen dioxide (1) NO ₂ (1)	[2]	
	b		There was a decrease ... <input type="checkbox"/> More cars and power stations ... <input checked="" type="checkbox"/> (1) There was an increase ... <input type="checkbox"/> More cars were fitted ... <input type="checkbox"/> More power stations were fitted ... <input checked="" type="checkbox"/> (1) More people changed ... <input type="checkbox"/>	[2]	
	c		people living near ... <input type="checkbox"/> people working in ... <input type="checkbox"/> the Government ... <input checked="" type="checkbox"/> (1) the companies supplying ... <input type="checkbox"/>	[1]	
			Total	[8]	

Question			Expected Answers	Marks	Additional Guidance																				
2	a	i	any two from: it enables an average/mean to be calculated; it allows outliers to be identified (and discarded); it allows for differences in samples / it allows for errors in equipment / it allows for errors in technique / one measurement may be in error;	[2]	do not allow it increases the reliability/accuracy of the results allow it increases the reliability/accuracy of the best estimate																				
		ii	0.168 (2)	[2]	2 marks for correct answer allow 1 mark for addition of values to 0.84																				
	b		<table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"></td> <td style="text-align: center;"><input type="checkbox"/></td> <td></td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: right;">(1)</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"></td> <td style="text-align: center;"><input type="checkbox"/></td> <td></td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: right;">(1)</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"></td> <td style="text-align: center;"><input type="checkbox"/></td> <td></td> </tr> </table>	<input type="checkbox"/>		<input type="checkbox"/>		<input checked="" type="checkbox"/>		<input type="checkbox"/>	(1)	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input checked="" type="checkbox"/>	(1)	<input type="checkbox"/>		<input type="checkbox"/>		[2]	
<input type="checkbox"/>		<input type="checkbox"/>																							
<input checked="" type="checkbox"/>		<input type="checkbox"/>	(1)																						
<input type="checkbox"/>		<input type="checkbox"/>																							
<input type="checkbox"/>		<input checked="" type="checkbox"/>	(1)																						
<input type="checkbox"/>		<input type="checkbox"/>																							
			Total	[6]																					

Question			Expected Answers	Marks	Additional Guidance
3	a	i	135 (1)	[1]	
		ii	134 to 137 (1)	[1]	allow 137 to 134 but do not allow 3 or 4
		iii	<p>B higher than A <input type="checkbox"/></p> <p>... same value as the mean. <input type="checkbox"/></p> <p>The mean near to the middle ... <input type="checkbox"/></p> <p>... narrow range. <input checked="" type="checkbox"/> (1)</p>	[1]	
		iv	<p>... many errors ... <input type="checkbox"/></p> <p>... small variations in structure. <input checked="" type="checkbox"/> (1)</p> <p>... different melting points. <input type="checkbox"/></p>	[1]	
	b	i	<p>it has a lower melting point (1)</p> <p>and any one from:</p> <p>which will allow easier moulding;</p> <p>reduces energy needed/cost of heating;</p> <p>idea of increased productivity/time saving;</p>	[2]	first mark requires comparison
		ii		[2]	<p>all three correct = 2 marks</p> <p>two correct = 1 mark</p> <p>two lines to or from one box negates that box from score</p>
			Total	[8]	

Question		Expected Answers	Marks	Additional Guidance
4	a	valid choice of article (no marks) material this article used to be made from (1) material this article is now made from (1) valid advantage of new material (1)	[3]	if article choice is not valid = 0 marks reject any mention of shoes advantage mark can only be scored if two different old and new materials valid for the article named are given
	b	... renewable ... <input checked="" type="checkbox"/> ... more attractive appearance ... <input type="checkbox"/> ... more expensive ... <input type="checkbox"/> ... will rot ... <input checked="" type="checkbox"/> ... uses more energy ... <input checked="" type="checkbox"/> ... used for longer ... <input type="checkbox"/>	[2]	three correct answers = 2 marks two correct answers = 1 mark
	c	... chemicals from crude oil. <input type="checkbox"/> ... animal skins. <input type="checkbox"/> ... obtained without spoiling ... <input checked="" type="checkbox"/> (1) ... hard wearing ... <input type="checkbox"/>	[1]	
Total			[6]	

Question		Expected Answers	Marks	Additional Guidance		
5	a		[2]	three ticks in boxes as shown all three correct = 2 marks two correct = 1 mark		
		statement			type 1 diabetes	type 2 diabetes
		...diet and exercise			✓	
		...young people				✓
		...its own insulin		✓		
	b	i	[2]			
		... contains a lot of sugar. <input checked="" type="checkbox"/> (1) ... contains a lot of fat. <input type="checkbox"/> Fat digested into sugar. <input type="checkbox"/> Sugar is quickly absorbed... <input checked="" type="checkbox"/> (1)				
		ii	[2]	accept arguments based around 'no choice'		
		any two from: (they believe) it is cheaper to eat a poor diet; they do not have enough knowledge about food to make a more sensible choice; they do not realise that they have a higher risk; comfort eating / better taste / habit;				
Total			[6]			

Question		Expected Answers	Marks	Additional Guidance
6	a	amino acids (1) proteins (1)	[2]	
	b	plant legumes/beans/peas/clover / crop rotation (1) because bacteria in their roots fix nitrogen / because one crop puts back the nitrogen taken out by others (1)	[2]	do not allow idea of adding compost /dead plants/ dead animals/sewage to soil do not allow small scale ideas that apply to gardening but not farming
	c	i	[3]	at least one pests answer at least one weeds answer other answer can be either all pests answer /all weeds answer = max 2 marks
		any three (including at least one 'pests' answer and at least one 'weeds' answer) from: 'pests' idea of using natural predators of insect pests; pick off insects by hand; grow insect repelling plants amongst crops; use protective measures eg scarecrows, netting or bird scares; 'weeds' pull out weeds by hand; plant crops with little space between to deter weeds; use mulch on surface of soil to deter weeds;		
		ii	[1]	idea of not using harmful chemicals (1)
		Total	[8]	

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

OCR Customer Contact Centre

14 – 19 Qualifications (General)

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

© OCR 2010