

Additional Science A

General Certificate of Secondary Education

Unit **A216/02**: Modules B5, C5, P5 (Higher Tier)

Mark Scheme for June 2011

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 2011

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

A216/02

Mark Scheme

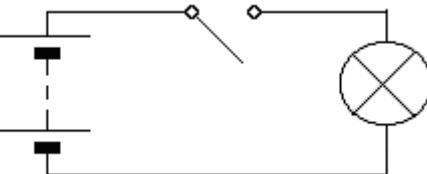
June 2011

Question		Answer			Mark	Guidance	
1	a	3, 2, 2			2	all correct = 2 2 correct = 1	
	b	answer = 62.1 [tonnes] (1)			2	if not correct, accept any reference to 239 for 1 mark	
	c	higher quality ores <input type="checkbox"/> <input checked="" type="checkbox"/> (1) <input type="checkbox"/> There are no ores left <input checked="" type="checkbox"/> (1) <input type="checkbox"/> <input type="checkbox"/>			1		
d		description	silicon dioxide only	sulfur dioxide only	both	neither	7 ticks correct = 4 6 or 5 ticks correct = 3 4 or 3 ticks correct = 2 2 ticks correct = 1 1 tick correct = 0
		high melting point	✓				
		low melting point		✓			
		covalent bonds			✓		
		ionic bonds				✓	
		giant structure	✓				
		simple molecular compound		✓			
		weak forces between		✓			

Question		Answer	Mark	Guidance
	e	recycling [if the material is named, it must be lead containing] (1) of car batteries (1)	2	
	f	A (1)	1	
	g	i Br ⁻¹ (1)	1	accept Br ⁻¹ must be capital 'B' and lower case 'r'
	ii	line from the lead ion pointing towards the negative electrode. The line must stay within the liquid, and must not end below the bottom of the electrode. line from bromide ion pointing towards the positive electrode. The line must stay within the liquid, and must not end below the bottom of the electrode.	1	lines must have direction indication, e.g. arrowheads lines go anticlockwise
		Total	[14]	

2	a	voltage (1) current (1)	2	
	b	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Move the magnet more quickly into ... <input checked="" type="checkbox"/> (1) Increase the number of turns ... <input checked="" type="checkbox"/> (1) <input type="checkbox"/>	2	correct pattern = 2 one mistake = 1 a mistake is <ul style="list-style-type: none"> • a tick in the wrong place • a missing tick • an extra tick
		Total	[4]	

Question		Answer	Mark	Guidance
3	a	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> All three resistors have the same ... <input checked="" type="checkbox"/> (1)	1	
	b	electrons move [atoms don't] [electrons] collide with atoms [in the resistor] energy transferred FROM [electrons to atoms] / MAKES atoms [only] vibrate OWTTE	3	ignore reference to current ignore 'electrons and atoms collide'
	c	24 W (1)	1	
		Total	[5]	

Question		Answer	Mark	Guidance
4	a		1	look for complete loop and correct symbol for switch and lamp anywhere in series with other components accept curved lines for wires accept switch without the circles accept either symbol for the lamp / LED correct direction
	b	resistance (1) battery (1) current (1)	3	
	c	Charge is not able to flow through ... <input checked="" type="checkbox"/> (1) <input type="checkbox"/> <input type="checkbox"/>	1	
Total		[5]		

Question		Answer	Mark	Guidance
5	a	B (1)	1	
	b	<p>any three from:</p> <p>meiosis (1)</p> <p>idea that [gametes have] 39 chromosomes / haploid / half the chromosomes (1)</p> <p>links [gamete fusion] to zygote / embryo (1)</p> <p>[gametes fuse] to give full number / diploid / double the number of chromosomes (1)</p>	3	<p>NB 'Gametes fuse' is in the stem</p> <p>accept mis-spelling of meiosis [ie but not if a 'T' is present!]</p> <p>accept 'reduction division' instead of meiosis</p> <p>unless stated otherwise, assume that the candidate is referring to gametes as the product of cell division</p> <p>this mark not available if candidate implies chromosomes come from both parents</p> <p>ignore 'cells/ chromosomes split in half'</p> <p>allow 'half the <u>genetic</u> information'</p> <p>'gametes fuse and double the number of chromosomes' = 1</p> <p>ignore 'gametes double the number of chromosomes'</p> <p>ignore 'half the chromosomes from each parent' in the context of this marking point</p> <p>references to fusing and to halving must be in the correct context</p>
		Total	[4]	

6	a	nucleus cytoplasm two four	2	4 correct = 2 3 or 2 correct = 1
	b	link different genes to [different] protein / colours (1) genes are switched on/off [at different times of the year] (1)	2	accept 'activated' / made active
	c	27 % (1)	1	
		Total	[5]	

Question		Answer	Mark	Guidance
7	a	C (1)	1	
	b	auxin diffused <input type="checkbox"/> <input checked="" type="checkbox"/> (1) <input type="checkbox"/> most auxin grew more <input checked="" type="checkbox"/> (1) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	2	
	c	photosynthesis (1)	1	
	d	Wendy (1)	1	
		Total	[5]	

		Paper Total	[42]	
--	--	--------------------	-------------	--

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