



GCSE

## Additional Science A

General Certificate of Secondary Education

Unit **A217/01**: Modules B6, C6, P6 (Foundation Tier)

## Mark Scheme for June 2011

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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.

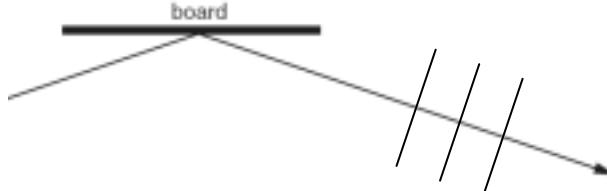
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Any enquiries about publications should be addressed to:

OCR Publications  
PO Box 5050  
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Question		Answer	Mark	Guidance
1	a	<p>cancels out the direct wave</p> <p><input type="checkbox"/></p> <p><input checked="" type="checkbox"/> (1)</p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p>	1	
	b		2	<p>curved lines = 0 marks</p> <p><b>three</b> wavefronts of correct spacing (same as before hitting board) on the right of board (1)</p> <p>at right angles to reflected ray (1)</p>
	c	<p>speed</p> <p>frequency</p> <p>wavelength</p> <p>The distance between ...</p> <p>The distance moved ...</p> <p>The number of ...</p>	2	<p>correct pattern for 2 marks</p> <p>one or two mistakes for 1 mark</p> <p>a mistake is</p> <ul style="list-style-type: none"> <li>• a line in the wrong place</li> <li>• a missing line</li> <li>• an extra line</li> </ul>
		<b>Total</b>	<b>[5]</b>	

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Question		Answer	Mark	Guidance
2	a	<div style="border: 1px solid black; padding: 5px; display: inline-block;">           ultraviolet <input type="checkbox"/> X-ray <input type="checkbox"/> gamma ray <input type="checkbox"/> </div>	1	any unambiguous response in the correct box
	b	speed (1) space (1)	2	<b>accept</b> 'vacuum' instead of 'space'
	c	tooth absorbs X-rays (1)  film changes colour when absorbs X-rays / film white where X-rays do not reach it / black where X-rays reach it (1)	2	<b>accept</b> X-rays don't get through the tooth <b>accept</b> different parts of the tooth absorb X-rays differently  <b>accept</b> tooth forms a shadow on the film
		<b>Total</b>	<b>[5]</b>	

3	a	one and zero (1)	1	not one on its own, not zero on its own
	b	modulation (1) noise (1) sound (1)	3	
		<b>Total</b>		<b>[4]</b>

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Question		Answer	Mark	Guidance
4	a	Niall (1) Beth (1)	2	<b>accept</b> in either order <b>accept</b> any clear indication of correct response
	b	language / talking / intelligence / consciousness / thinking / processing information (1)	1	apply list principle <b>accept</b> otte <b>reject</b> personality / owtte <b>reject</b> memory
	c	electrical stimulation (of the brain) / electroencephalogram (EEG) / magnetic resonance imaging (MRI scans) / functional magnetic resonance imaging (fMRI scans) / positron emission tomography (PET scans) / (radioactive) tracers / studies of patients with traumatic brain damage (1)	1	<b>not</b> CAT scans / X-rays / brain scans / ECG / dissection  <b>not</b> decay e.g. not Alzheimer's
<b>Total</b>		<b>[4]</b>		

5	a	spinal cord (1) sensory (1) synapses (1)	3	
	b	i C - axon (1)	1	
		ii D - fatty sheath (1)	1	
	c	<b>any three from:</b> receptor detects stimulus; (electrical) impulse; correct sequence of receptor, sensory neuron, motor neuron, effector; effector makes the movement;	3	<b>accept</b> nervous impulses <b>accept</b> signals <b>reject</b> sequence which includes brain
<b>Total</b>		<b>[8]</b>		

6		a stimulus (1) dealing with a new situation (1)	2	
		<b>Total</b>		<b>[2]</b>

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Question		Answer	Mark	Guidance
7		particles smaller (1) rate faster (1)	2	this is the <b>minimum</b> acceptable response <b>accept</b> higher level answers e.g. correct reference to surface area
		<b>Total</b>	[2]	

8	a	calcium + hydrochloric acid → calcium chloride + carbon dioxide	1	the two reactants can be in either order the three products can be in any order
	b	calcium chloride (1)	1	
	c	i 1 (1)	1	
		ii universal indicator <input type="checkbox"/> pH meter <input checked="" type="checkbox"/> <input type="checkbox"/>	1	both correct for 1 mark
	d	7 (1)	1	
		<b>Total</b>	<b>[5]</b>	

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Question		Answer	Mark	Guidance
9	a	l, g, s, g	1	in that order do not penalise use of capitals
	b	impurities are solid / separate / as a mixture / not bonded to reactants (1) filtering / decanting / evaporating / distilling (1) after reaction 1 / before reaction 2 / while is liquid titanium chloride (1)	3	<b>reject</b> filtering if impurity is liquid <b>reject</b> distilling/evaporating of solid impurity look for a separation method that makes physical sense
	c	$\frac{210 \times 100}{300} \quad (1)$	1	
	d		2	one mark for each correct response
		<b>Total</b>	<b>[7]</b>	

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

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Facsimile: 01223 552553