



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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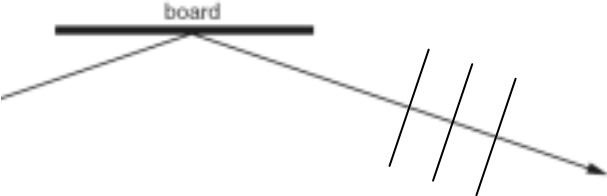
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Question			Answer	Mark	Guidance
1	a		<div style="display: flex; align-items: center; justify-content: center;"> <div style="margin-right: 10px;">cancels out the direct wave</div> <div style="display: flex; flex-direction: column; align-items: center;"> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> </div> <div style="margin-left: 10px;">(1)</div> </div>	1	
	b			2	<p>curved lines = 0 marks</p> <p>three 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		<div style="display: flex; flex-direction: column; align-items: center;"> <div style="display: flex; justify-content: space-around; width: 100%;"> <div style="border: 1px solid black; padding: 5px; margin: 5px;">speed</div> <div style="border: 1px solid black; padding: 5px; margin: 5px;">The distance between ...</div> </div> <div style="display: flex; justify-content: space-around; width: 100%;"> <div style="border: 1px solid black; padding: 5px; margin: 5px;">frequency</div> <div style="border: 1px solid black; padding: 5px; margin: 5px;">The distance moved ...</div> </div> <div style="display: flex; justify-content: space-around; width: 100%;"> <div style="border: 1px solid black; padding: 5px; margin: 5px;">wavelength</div> <div style="border: 1px solid black; padding: 5px; margin: 5px;">The number of ...</div> </div> </div>	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"> a line in the wrong place a missing line an extra line
			Total	[5]	

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Question			Answer	Mark	Guidance
2	a		<div> <div>ultraviolet</div> <div>X-ray</div> <div>gamma ray</div> </div>	1	any unambiguous response in the correct box
	b		speed (1) space (1)	2	accept '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	accept X-rays don't get through the tooth accept different parts of the tooth absorb X-rays differently accept tooth forms a shadow on the film
			Total	[5]	
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	
			Total	[4]	

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Question			Answer	Mark	Guidance
4	a		Niall (1) Beth (1)	2	accept in either order accept any clear indication of correct response
	b		language / talking / intelligence / consciousness / thinking / processing information (1)	1	apply list principle accept otte reject personality / owtte reject 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	not CAT scans / X-rays / brain scans / ECG / dissection not decay e.g. not Alzheimer's
			Total	[4]	

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

6			a stimulus (1) dealing with a new situation (1)	2	
			Total	[2]	

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

8	a		calcium + hydrochloric → calcium + carbon + water carbonate acid chloride 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	<div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div> <p><input type="checkbox"/></p> <p>universal indicator</p> <p>pH meter</p> <p><input type="checkbox"/></p> </div> <div> <p><input checked="" type="checkbox"/></p> <p><input checked="" type="checkbox"/></p> </div> </div>	1	both correct for 1 mark
	d		7 (1)	1	
			Total	[5]	

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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	reject filtering if impurity is liquid reject 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
Total			[7]	

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