



**GCSE**

## **Additional Science A**

General Certificate of Secondary Education **A217/01**

Unit 3: Modules B6, C6, P6 (Foundation Tier)

## **Mark Scheme for June 2010**

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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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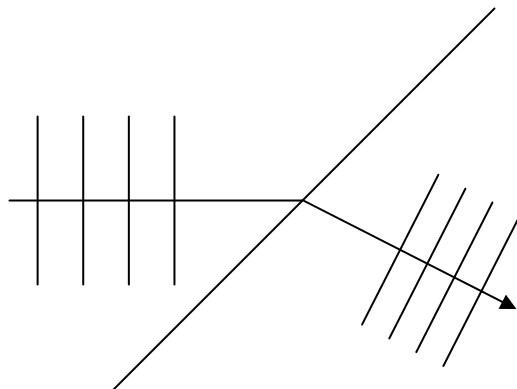
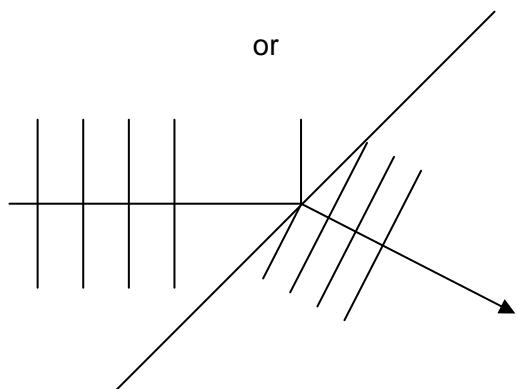
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Question		Expected Answers	Marks	Additional Guidance
1	a	<div style="display: flex; align-items: center; justify-content: space-around;"> <div>What Jane says ...</div> <div>... is affected ...</div> </div> <div style="display: flex; align-items: center; justify-content: space-around; margin-top: 10px;"> <div>The quality ...</div> <div>... is converted ...</div> </div> <div style="display: flex; align-items: center; justify-content: space-around; margin-top: 10px;"> <div>The wave ...</div> <div>... is modulated ...</div> </div>	[2]	<p>correct pattern = 2 marks one or two mistakes = 1 mark</p> <p>a mistake is a missing line or a line in the wrong place</p>
	b i	<div style="text-align: center; margin-top: 10px;"> <div>direct</div> <div>reflected</div> </div>	[1]	both required for 1 mark
	ii	discusses waves (1) which cancel each other out (1)	[2]	
		<b>Total</b>	<b>[5]</b>	

Question		Expected Answers	Marks	Additional Guidance
2	a	300 m/s (1)	[1]	
	b	<div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="border: 1px solid black; padding: 5px; margin-right: 10px;">intensity</div> <div style="border: 1px solid black; padding: 5px; margin-right: 10px;">waves per second</div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="border: 1px solid black; padding: 5px; margin-right: 10px;">amplitude</div> <div style="border: 1px solid black; padding: 5px; margin-right: 10px;">energy per second</div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="border: 1px solid black; padding: 5px; margin-right: 10px;">frequency</div> <div style="border: 1px solid black; padding: 5px; margin-right: 10px;">size of disturbance</div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="border: 1px solid black; padding: 5px; margin-right: 10px;">wavelength</div> <div style="border: 1px solid black; padding: 5px;">distance between crests</div> </div>	<p>[2] correct pattern = 2 marks one or two mistakes = 1 mark  a mistake is a missing line or a line in the wrong place</p>	
	c	decreases stays the same	[1]	<p><b>accept</b> gets smaller / reduces (owtte)  <b>accept</b> remains constant / doesn't change (owtte)  both required for 1 mark</p>
		<b>Total</b>		[4]

Question		Expected Answers	Marks	Additional Guidance							
3	a	refraction (1) the wave changes speed (1)		[2]							
	b	 or 		[1]							
	c	<table border="1"> <tr> <td>radio waves</td> <td></td> <td></td> <td>visible light</td> <td></td> <td></td> <td>gamma rays</td> </tr> </table>		radio waves			visible light			gamma rays	[2]
radio waves			visible light			gamma rays					
		Total		[5]							

Question		Expected Answers	Marks	Additional Guidance
4	a	MgSO <sub>4</sub> (1)	[1]	
	b		[1]	
	c	Donna (1)	[1]	
	d i	Mg(OH) <sub>2</sub> (1) NaOH (1)	[2]	correct pattern = 2 marks one mistake = 1 mark  a mistake is <ul style="list-style-type: none"> <li>• a ring in the wrong place</li> <li>• a missing ring</li> <li>• an extra ring</li> </ul>
	ii	salt (solution) (1) water (1)	[2]	in any order <b>ignore</b> named salts e.g. magnesium sulfate
	<b>Total</b>		[7]	

5	a	removing impurities is expensive / impure acid is cheaper (1) impurities do not stop acid doing the job (1)	[2]	<b>not</b> acid becomes impure as it is used  <b>ignore</b> references to strength of acid
	b	use a probe/meter <b>and</b> look for reading/number (1)  use paper/indicator <b>and</b> look for colour (1)	[2]	in any order must have both device and observation for each mark  <b>accept</b> universal/litmus/Universal/pH
		<b>Total</b>	[4]	

6	a	A B	[1]	both required for 1 mark in any order
	b	A (1)	[1]	
	c	C (1)	[1]	
		<b>Total</b>	[3]	

Question		Expected Answers	Marks	Additional Guidance
7	a	storage retrieval	[1]	both required for 1 mark
	b	billions experience transmit	[2]	all three correct = 2 marks two or one correct = 1 mark
	c		[1]	
The variety of potential pathways ...		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> (1)		
		<b>Total</b>	[4]	

Question	Expected Answers			Marks	Additional Guidance
8 a				[2]	<p>correct pattern = 2 marks one mistake = 1 mark</p> <p>a mistake is</p> <ul style="list-style-type: none"> <li>• an extra tick</li> <li>• a missing tick</li> <li>• a tick in the wrong place</li> </ul> <p>The wasp has difficulty ... <input checked="" type="checkbox"/> (1)</p> <p>The wasp relies on reflex . <input checked="" type="checkbox"/> (1)</p>
b i			<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 5px; text-align: center;">motor</div> <div style="border: 1px solid black; padding: 5px; text-align: center;">sensory</div> </div>	[2]	
	ii	<b>any three from:</b> impulse in sensory neuron from skin; impulse is an electrical signal; passes between neurons across a synapse; to a relay neuron; in the spinal cord; impulse in motor neuron to muscle;			<p>[3]</p> <p><b>accept</b> in the spine</p>
		<b>Total</b>			[7]

9 a		language (1)	[1]	
	b	<b>any two from:</b> stimulate brain electrically / owtte; study people with brain damage; view brain in MRI scanner;	[2]	<b>accept</b> study the 'brains of dead people' / owtte do <b>not</b> accept X-ray or CT scan
		<b>Total</b>		[3]

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