

**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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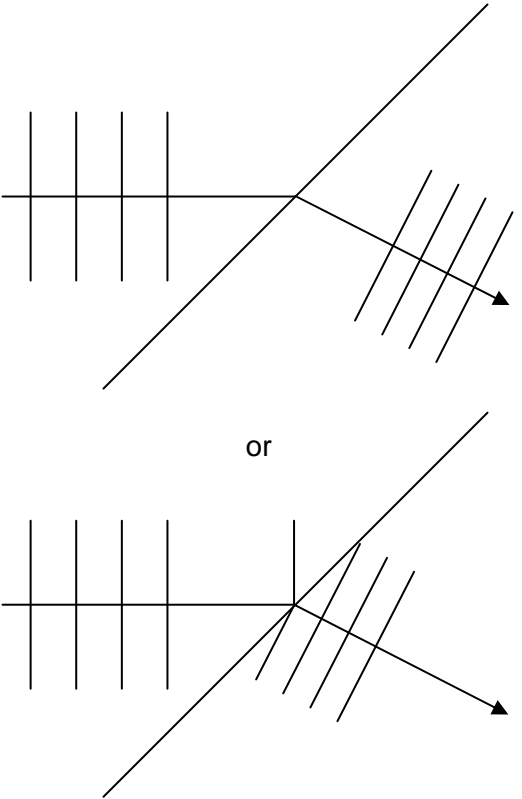
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Question		Expected Answers	Marks	Additional Guidance
1	a		[2]	<p>correct pattern = 2 marks  one or two mistakes = 1 mark</p> <p>a mistake is a missing line or a line in the wrong place</p>
	b	i		
		<div style="text-align: center;"> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">direct</div>    <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">reflected</div> </div>	[1]	both required for 1 mark
		ii		
		discusses waves (1) which cancel each other out (1)	[2]	
		<b>Total</b>	[5]	

Question		Expected Answers	Marks	Additional Guidance
2	a	300 m/s (1)	[1]	
	b		[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>
	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]	accept slows down							
b		[1]	look for four wavefronts on right closer together than on left ignore angle to the direction of energy flow accept irregular spacing if two of the gaps are smaller than the gaps on the left hand side							
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]	all three correct = 2 marks one or two correct = 1 mark
radio waves			visible light			gamma rays				
<b>Total</b>		<b>[5]</b>								

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/Ui/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	<div style="text-align: right;"> <input type="checkbox"/>  <input type="checkbox"/>  <input type="checkbox"/>            The variety of potential pathways ... <input checked="" type="checkbox"/> (1)         </div>	[1]	
<b>Total</b>			<b>[4]</b>	

Question		Expected Answers	Marks	Additional Guidance
8	a	<div style="text-align: center;"> <input type="checkbox"/>  <input type="checkbox"/>  <input type="checkbox"/>            The wasp has difficulty ... <input checked="" type="checkbox"/> (1)            The wasp relies on reflex . <input checked="" type="checkbox"/> (1)         </div>	[2]	correct pattern = 2 marks one mistake = 1 mark  a mistake is <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>
	b	i	[2]	
		<div style="text-align: center;"> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">motor</div>   <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">sensory</div> </div>		
		ii	[3]	
		<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;		<b>accept</b> in the spine
		<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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