



GCSE

Additional Science A

General Certificate of Secondary Education **A217/02**

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

Mark Scheme for June 2010

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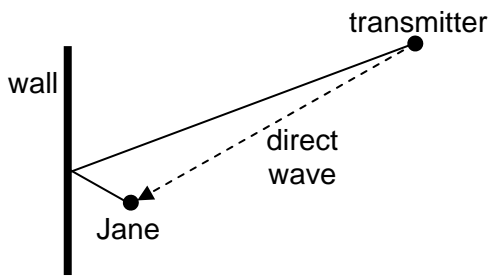
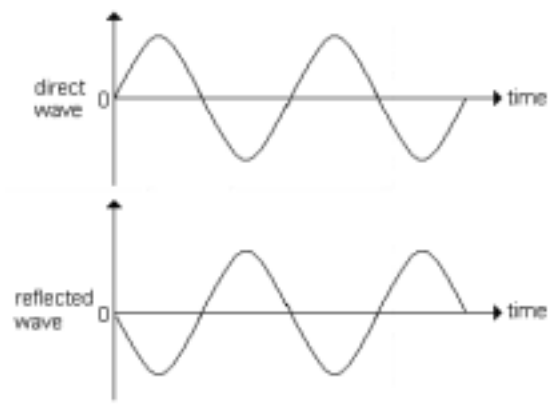
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Question			Expected Answers	Marks	Additional Guidance
1	a		300 m/s (1)	[1]	
	b			[2]	<p>correct pattern = 2 marks one or two mistakes = 1 mark</p> <p>a mistake is a missing line or a line in the wrong place</p>
	c		decreases stays the same	[1]	<p>accept gets smaller / reduces (owtte) accept remains constant / doesn't change (owtte) both required for the mark</p>
			Total	[4]	

Question			Expected Answers	Marks	Additional Guidance
2	a		digital modulate noise pulses	[2]	all four correct = 2 marks any two or three correct = 1 mark
	b	i		[1]	look for straight line from transmitter to wall, then straight line from wall to Jane with equal angles of incidence and reflection on or between red and green lines of template no breaks in the line from transmitter to Jane not freehand lines ignore arrows
		ii		[1]	look for one whole cycle of the wave in antiphase accept any amplitude must cross zero on or between lines of template

Question			Expected Answers	Marks	Additional Guidance
2	b	iii	<div> <input type="checkbox"/> </div> <div> Waves which arrive in step ... <input checked="" type="checkbox"/> </div> <div> <input type="checkbox"/> </div> <div> <input type="checkbox"/> </div> <div> There is an interference pattern ... <input checked="" type="checkbox"/> </div>	[1]	correct pattern = 1 mark
			Total	[5]	

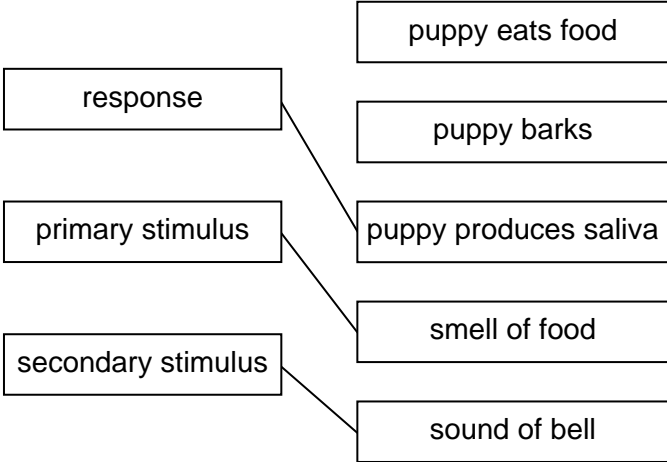
Question			Expected Answers	Marks	Additional Guidance
3	a		<div>The light does not ...</div> <div>... enters and leaves ...</div>	[2]	correct pattern = 2 marks one or two mistakes = 1 mark a mistake is <ul style="list-style-type: none">a line in the wrong placea missing line
			<div>The light slows ...</div> <div>... reflects off the glass.</div>		
			<div>The light speeds ...</div> <div>... enters the glass.</div>		
			<div>The light refracts ...</div> <div>... leaves the glass.</div>		
	b	any two from: speed decreases; wavelength decreases; frequency remains unchanged;		[2]	no ecf from incorrect speed change all marking points are independent
	c	<div><div>radio</div><div></div><div></div><div>(visible) light</div><div></div><div></div><div>gamma</div></div>		[1]	all three correct =- 1 mark accept visible or light on its own ignore TV accept γ instead of gamma ignore rays or photons
			Total	[5]	

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

Question			Expected Answers			Marks	Additional Guidance
5						[4]	all six correct = 4 marks five correct = 3 marks four correct = 2 marks three correct = 1 mark lose 1 mark for each mistake
			student	experiment 1	experiment 2		
			Arthur	B	A		
			Ben	B	C		
			Chet	B	A		
			Total			[4]	

6	a		Mg(OH) ₂ NaOH	[1]	both required for the mark
	b		sodium nitrate carbon dioxide water	[2]	all three correct = 2 marks two or one correct = 1 mark accept CO ₂ for carbon dioxide accept H ₂ O for water accept NaNO ₃ for sodium nitrate
	c		$\text{CuO} + 2\text{HCl} \longrightarrow \text{CuCl}_2 + \text{H}_2\text{O}$ correct formulae for chemicals before arrow (1) correct formulae for chemicals after arrow (1) 2 in front of HCl with rest of equation correct (1)	[3]	subscript must be at least half of full character size u in Cu and l in Cl must look lower case ignore state symbols eg (aq)
			Total	[6]	

Question			Expected Answers	Marks	Additional Guidance
7	a		retrieval storage	[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]	
			Total	[4]	

Question			Expected Answers	Marks	Additional Guidance
8	a	i		[2]	<p>correct pattern of lines = 2 marks one or two mistakes = 1 mark</p> <p>a mistake is</p> <ul style="list-style-type: none"> • a missing line • an extra line • a line in the wrong place
	a	ii	<p>... has no direct connection ...</p> <div style="display: flex; align-items: center;"> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> (1) <input type="checkbox"/> </div>	[1]	

Question		Expected Answers	Marks	Additional Guidance
8	b	<p>disadvantage: difficult to respond to new situations (1)</p> <p>advantages: any two from: aids survival; helps to find food; helps to find a mate; speeds up response; involuntary;</p>	[3]	<p>accept cannot learn new response accept cannot adapt / change response</p> <p>accept avoid danger / predators</p> <p>accept get away quicker accept no need to think / choose response</p> <p>must have one disadvantage and two advantages for 3 marks</p>
		Total	[6]	
9		<div style="border: 1px solid black; display: inline-block; padding: 2px; margin: 10px 0;">E B C J G</div> <p>first box E (1) last box G (1) B before C (1) C before J (1)</p>	[4]	
		Total	[4]	

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