



*Rewarding Learning*

**General Certificate of Secondary Education  
2010–2011**

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**Science: Single Award (Modular)**  
Electricity, Waves and Communication

Module 5

Foundation Tier

**[GSC51]**

**FRIDAY 20 MAY 2011, MORNING**

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**MARK  
SCHEME**

			AVAILABLE MARKS		
1	(a) (i)	visible light	[1]	7	
	(ii)	x-rays	[1]		
	(iii)	electromagnetic	[1]		
	(b)	1 + 5 ([1] each)	[2]		
	(c) (i)	The higher the frequency of a wave, the more energy it has.	[1]		
	(ii)	hertz	[1]		
2	(a) (i)	correct symbol = [1] in parallel across A = [1]	[2]		11
	(ii)	brighter/hotter = [1] + more volts/voltage = [1] electricity/current power/energy	[2]		
	(iii)	other bulb goes out = [1] gap in circuit/current doesn't flow = [1]	[2]		
	(b)	$\frac{6}{2} = [1]$ $3 = [2]$	[2]		
	(c)	wire melts/breaks/blows/burns out/current cut off	[1]		
	(d)	cable grip/plastic insulated cover/earth pin <i>longer</i> <b>not</b> plastic cover on wire (x)    any 2	[2]		
3	(a) (i)	$5 \times 2 = [1]$ $10 = [2]$	[2]	7	
	(ii)	watt	[1]		
	(b) (i)	cancer/tumour	[1]		
	(ii)	speaker phone/text/hands free/hold further away [1] shorter time for call [1] use less often (x)	[2]		
(c)	less interference/processed by computer clearer/(signal)	[1]			
4	(a) (i)	convex/converging	[1]	5	
	(ii)	to converge/bend/refract light = [1] to form a focus clear image on the retina = [1]	[2]		
	(b) (i)	short sight	[1]		
	(ii)	far objects are blurry; near objects are clearer	[1]		

			AVAILABLE MARKS
5	(a) (i) transverse	[1]	
	(ii) The vibrations are at right angles to the direction of the wave.	[1]	
(b)	(i) 4 cm	[1]	
	(ii) 6 cm	[1]	
(c)	(i) see – hear appropriate timing large distance formula } any three	[3]	
	(ii) accurate: ensure time started when blocks banged; stopwatch/ same person increased distances = [1] reliable: repeat/average = [1]	[2]	9
6	(a) 4500	[1]	
	(b) wind; less amount of land; electricity produced; intermittent/unreliable hydroelectric – lack of sites/cost/flooding	[2]	
(c)	(i) 12500	[1]	
	(ii) no/less greenhouse gases/carbon dioxide/air pollution/ [1] no/less global warming/	[2]	6
	or less sulphur dioxide/carbon dioxide [1] less acid rain [1]		
<b>Total</b>			<b>45</b>