



Rewarding Learning

General Certificate of Secondary Education
2011–2012

Science: Single Award (Modular)

Electricity, Waves and Communication

Module 5

Higher Tier

[GSC52]

THURSDAY 24 MAY 2012

9.15 am–10.00 am

**MARK
SCHEME**

			AVAILABLE MARKS	
1	(a)	120/0.8 [1] 240/0.8 or 120/0.4 [2] 300 [3]	[3]	
	(b)	(i) (sound with a) frequency [1] too high for humans to hear/above 20 kHz [1]	[2]	
		(ii) scanning/fish finding/map sea bed/cleaning delicate equipment/ lithotripsy	[1]	
	(c)	(i) transverse	[1]	
		(ii) (caused by) vibrations/carry energy	[1]	8
2	(a)	6.8p	[1]	
	(b)	renewables cost more to build/have cheaper fuel costs cost more to run/total cost is more (any 2 = 1 mark each)	[2]	
	(c)	power station is shut down/waste removed site restored to former state (any 2 = 1 mark each) expensive to get rid of waste/no radiation leaks waste is radioactive for a long time/concrete over	[3]	
	(d)	ruins habitats/eyesore/ugly/inhibits shipping lanes	[1]	7
3	(a)	magnet + coil of wire [1] movement [1]	[2]	
	(b)	(i) 0.2A	[1]	
		(ii) 12–15 mins [1] faster = more current [1]	[2]	
		(iii) no movement = no current/no light/battery power/always on	[1]	
	(c)	2.4/6 [1] 0.4A [2]	[2]	8

		AVAILABLE MARKS
4	(a) change the variable resistor/change length of wire	[1]
	(b) (i) direction from +ve to -ve	[1]
	(ii) actual is in opposite direction/from -ve to +ve [1] actual is flow of electrons [1] electrons are negatively charged [1] (any 2 = 1 mark each)	[2]
	(c) (i) as length increases, current decreases [1] as length increases, resistance increases [1] as current decreases, resistance increases [1] (any 2 = 1 mark each)	[2]
	(ii) width/type of material/temperature	[1]
5	(a) angle of incidence [1] is greater than the critical angle [1]	[2]
	(b) (i) carry more information [1] more secure [1] less prone to interference [1] faster signals [1] no energy loss [1] doesn't need boosted as often (any 2 = 1 mark each)	[2]
	(ii) reflectors/endoscopes/xmas tree lights/keyhole surgery	[1]
6	(a) light is refracted/bent by the cornea [1] light is refracted/bent by the lens [1] most refraction occurs at the cornea [1] light is focussed on the retina [1] (any 3 = 1 mark each)	[3]
	(b) (i) lens too strong [1]/too thick/too converging rays focussed in front of retina [1] far objects appear blurry/only close objects are clear [1]	[3]
	(ii) concave/diverging	[1]
	(iii) uneven curvature of cornea	[1]
	(iv) series of crossed lines or diagram [1] some lines appear thicker/more blurry [1]	[2]
Total		45