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)**	6.8 p [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)** 0.2 A [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] 0.4 A [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]	7
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]	5
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]	10
			Total	**45**