



*Rewarding Learning*

General Certificate of Secondary Education  
2010–2011

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**Science: Single Award (Modular)**

Road Safety, Radioactivity  
and Earth in Space  
Module 6

Foundation Tier

[GSC61]

FRIDAY 25 FEBRUARY 2011, MORNING

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**MARK  
SCHEME**

			AVAILABLE MARKS
1	(a) (i) The Solar System	[1]	8
	(ii) A – Neptune B – Mercury	[2]	
	(b) orbit; same; Milky Way	[3]	
	(c) (i) Asteroid <b>accept</b> meteor/comet/meteorite	[1]	
	(ii) Become extinct/die out	[1]	
2	(a) C A B	[1]	6
	(b) $1400 + 700 + 100 + 400 = 2600$ [1] $3000 - 2600 = 400$ [1]	[2]	
	(c) Coal/gas/lignite <b>accept</b> brown coal no derivatives ( <b>X</b> )	[1]	
	(d) Lignite	[1]	
	(e) Non-renewable/less CO <sub>2</sub> /less global warming/fossil fuels last longer	[1]	
3	(a) (i) 1.6N	[1]	4
	(ii) Friction	[1]	
	(b) <b>tennis shoe</b> [1] more grip/highest friction/less chance of slipping [1] maximum [2] must have tennis shoe to get 2nd mark	[2]	
4	(a) (i) 36m	[1]	12
	(ii) 3 bars correct [2]/or 2 bars correct [1]	[2]	
	(iii) No effect	[1]	
	(b) Air bags: prevent driver hitting wheel/windscreen. Seat belt; prevent driver/passenger hitting windscreen. Crumple zone; absorbs the (kinetic) energy on impact. } Any <b>two</b> [1] for the measure [1] for the reason, maximum [2]	[4]	
	(c) Any <b>two</b> from ● Bright coloured clothing ● use zebra crossing/pelican crossing ● face oncoming traffic ● use green cross code ● use footpath ● use right hand side of road	[2]	
	(d) Slow the car down/reduces breaking distance; less chance of a <b>serious</b> accident/injury.	[2]	

5	(a) speed = $140/14$ or $20/2$ ; 10 m/s	[2]	AVAILABLE MARKS
	(b) <b>Increasing</b> ; the dots are further apart.	[2]	
6	(a) Radiation that is always around us.	[1]	11
	(b) The combinations of neutrons and protons; are unstable.	[2]	
	(c) (i) Test more houses	[1]	
	(ii) Derry + Fermanagh	[1]	
	(iii) Radiation can harm/damage/change/kill living tissue/cell; which causes cancer (allow only lung cancer).	[2]	
	(d) Measure the radioactivity levels when sheets of thick lead, aluminium and paper are placed consecutively in front of source; Lead stops alpha, beta and gamma; Aluminium stops alpha and beta; Paper stops alpha. Any <b>three</b> [1] each maximum [3]	[3]	
	Same distance from source → sheet/source → detector <b>or</b> materials same thickness	[1]	
	<b>Total</b>		<b>45</b>