



*Rewarding Learning*

**General Certificate of Secondary Education  
2011–2012**

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**Science: Single Award (Modular)**

Human Activity and Health

Module 2

Higher Tier

[GSC22]

**MONDAY 27 FEBRUARY**

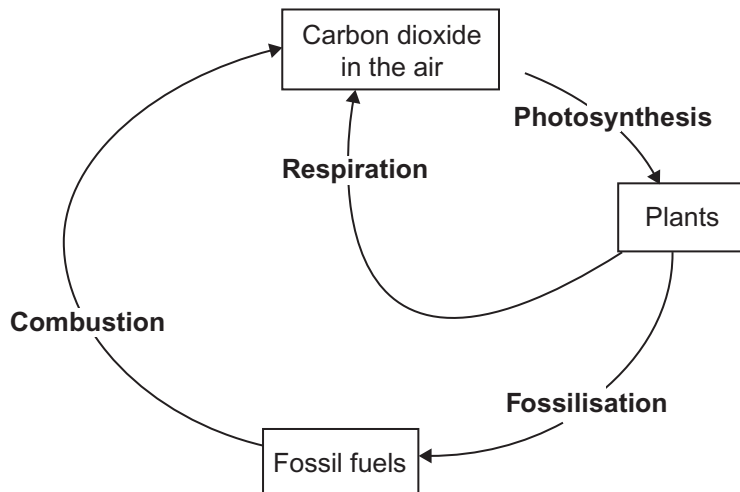
**11.00 am – 11.45 am**

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**MARK  
SCHEME**

			AVAILABLE MARKS
1	(a)	(i) length of time to produce (enough) antibodies/reach immunity [1]	9
		(ii) number remains constant/no or very small reduction with time/ lasts months/stays above line [1]	
	(b) modified (flu-causing) microbes; antibodies produced by body; complementary to antigen/microbe; attach/form clumps of microbes/ immobilisation; phagocytosis; memory cells remain (any four) [4]		
	(c)	(i) new microbes/antigens/diseases; no antibodies to combat/ new antibodies needed [2]	
		(ii) active [1]	
2	(a)	(i) spread by boats or other acceptable method [1]	6
		(ii) rhododendron/grey squirrel [1]	
		(iii) non-native/introduced by man; spread/number rising/grow quickly/ reproduce fast; damage habitats/native species/more successful/ dominant than native species (any two) [2]	
	(b)	(i) living/plant and animal [1]	
		(ii) lichens [1]	
3	(a)	(i) education/advertising/cost [1]	4
		(ii) passive smoking/hereditary factors/industrial chemicals [1]	
		(iii) bronchitis/emphysema [1]	
	(b) people less likely to binge drink/reduced violence (as smaller crowds on street) [1]		
4	(a)	(i) 0.29 kg [1]	5
		(ii) larger mesh sizes/fishing later in the season [1]	
		(iii) larger fish (sell for more)/overall mass more/fewer fish so cost increases [1]	
	(b) living longer; better medical care; better sanitation/hygiene; better nutrition/diet (any two) [2]		

- 5 (a) all stages/processes shown = 3, each stage clearly shown 1 mark each [max 3]



- [3]
- (b) more burning of fossil fuels; deforestation/fewer trees [2]
- (c) continue rays to show some reflecting back from atmosphere/  
not escaping from atmosphere [1]
- (d) some countries opted out/targets too low/not met/global warming still  
occurring (must imply Kyoto not working) [1]
- 6 (a) (i) in vitro testing – clinical trials [1]
- (ii) advantage – whole body system/no risk to humans/less testing  
on humans  
disadvantage – species differences [2]
- (iii) advanced in vitro testing/computer modelling [1]
- (b) advantage – more effective/fewer side effects  
disadvantage – cost/shortage of specialists [2]
- 7 (a) not all bacteria killed when antibiotic first used [1]
- (b) (i) non resistant bacteria killed; antibiotic resistant bacteria  
survive [2]
- (ii) change in bacteria over time; second antibiotic shows that all  
surviving bacteria are antibiotic resistant [2]
- (c) sterilise loop; replace lid in A/heat neck of bottle; partially open Petri  
dish lid only/replace lid quickly; carry out procedure beside lit Bunsen  
burner to sterilise air (any three) [3]

**Total**

**AVAILABLE  
MARKS**

7

6

8

**45**