



Rewarding Learning

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

Science: Single Award (Modular)

Human Activity and Health
Module 2

Higher Tier

[GSC22]

THURSDAY 24 FEBRUARY 2011, MORNING

**MARK
SCHEME**

			AVAILABLE MARKS	
1	(a)	combustion; respiration	[2]	7
	(b)	increase in combustion/ reduction in photosynthesis; carbon dioxide levels increase/trap heat/rays	[2]	
	(c)	willow renewable; takes in carbon dioxide; during photosynthesis; so no increase/reduced increase in carbon dioxide/carbon neutral Any three or peat not renewable; doesn't take in carbon dioxide; from photosynthesis; so increases carbon dioxide/global warming Any three	[3]	
2	(a)	(i) antibodies linked accurately to microbes/antigens	[1]	7
		(ii) phagocytosis	[1]	
		(iii) each disease-causing microbe/antigen different shape	[1]	
	(b)	passive immunity is faster acting; lasts short period of time; antibodies not produced by body Any two	[2]	
	(c)	vaccination lasts throughout winter/longer; flu could strike at any time over the winter	[2]	4
3		flask with swan neck; flask with broken neck/control; no contamination in flask with swan neck or converse; as microbes trapped in S bend; any one controlled variable, e.g. same temperature/same food/left for same length of time [must be specific]	[4]	4
4	(a)	(i) 12	[1]	9
		(ii) 15	[1]	
		(iii) lowest mass; competition; for light/space/nutrients/water	[3]	
	(b)	(i) introduced by man; harms native species	[2]	
		(ii) movement of boats ; mussel attach and detach /reproduce in new areas	[2]	

			AVAILABLE MARKS
5	(a)	(i) if not surrendering licence could buy another boat/stops them fishing [1]	7
		(ii) small fish not caught; allowed to mature and reproduce [2]	
	(b)	(i) filters; less sulphur dioxide/gases causing acid rain produced or alternative fuels; less sulphur dioxide/gases causing acid rain produced [2]	
		(ii) not spraying fertiliser in winter when wet/near lakes; better storage for slurry/silage; less run off into rivers Any two [2]	
6	(a)	(i) natural selection – drug resistant variety survives; non resistant variety killed; evolution – change in virus over time/mutates [3]	11
		(ii) easily spread/number of methods of spread/no cure (rapid)/mutate rapidly [1]	
	(b)	(i) due to drug resistance/chance that not resistant to one of the drugs [1]	
		(ii) as no cure/no other chance of prolonging life [1]	
		(iii) laboratory testing/working on cells [1]	
	(c)	(i) culturing microbes without contamination [1]	
		(ii) heating loop – to kill any microbes already present/sterilise; allowing loop to cool – to avoid killing the transferring bacteria; incubate at 30 °C – to avoid culturing pathogenic microbes/ microbes that can survive at body temperature [3]	
	Total		