



Rewarding Learning

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

Science: Single Award (Modular)

Human Activity and Health

Module 2

Higher Paper

[GSC22]

TUESDAY 8 NOVEMBER 2011

2.30 pm–3.15 pm

**MARK
SCHEME**

			AVAILABLE MARKS
1	fewer seedlings; not as close together/more spread; some died/didn't grow; due to competition/for light/water/space/minerals/nutrients	[4]	4
2	(a) (i) through the blood system	[1]	
	(ii) Any three from: mutations; in chromosome/genes/DNA; divide uncontrollably; due to UV light	[3]	
	(iii) (more) continental holidays/(more) sunbed use	[1]	
	(b) Down syndrome	[1]	
	(c) (i) new different/foreign diseases/antigens; does not have antibodies/memory cells	[2]	
	(ii) for antibody level (to build up)/reach immunity level	[1]	
	(iii) choice/not needed if not travelling/travel in luxury/not everyone goes on holiday	[1]	10
3	(a) sterilise/kill microbes	[1]	
	(b) no change/soup remained fresh; soup goes cloudy/contaminated	[2]	
	(c) Any two from: microbes cause contamination; need access; refuted spontaneous generation	[2]	5
4	(a) 2016	[1]	
	(b) (i) living	[1]	
	(ii) sewage/slurry/fertiliser: better storage/not spreading fertiliser in wet weather/frozen ground/winter [not restrict time of spread]	[2]	4
5	(a) (i) curves correctly identified	[1]	
	(ii) shorter/more even height; less likely to suffer damage/easier harvest	[2]	
	(iii) artificial [not selective breeding]	[1]	
	(iv) higher yields/more profit	[1]	
	(b) (i) Darwin	[1]	
	(ii) conflict with religious beliefs	[1]	7

			AVAILABLE MARKS		
6	(a) (i)	culture tube flamed/Petri dish lid only partially opened ajar has cap	[1]	10	
	(ii)	Any three from: flame loop/use disposable sterile loop; allow loop to cool; take bacteria from culture bottle; and spread over Petri dish; flame/dispose of loop; seal/cover Petri dish	[3]		
	(iii)	avoid culturing pathogenic microbes/not growing microbes at body temperature	[1]		
	(b) (i)	C	[1]		
	(ii)	side effects/how long it takes to work/costs	[1]		
	(iii)	no clear areas/no antibiotic has any effect on bacteria	[1]		
	(c)	phagocyte eats/engulfs microbe; digests/breaks down/kills/destroys microbe in cell	[2]		
7	willow:	(when growing) photosynthesis/take carbon dioxide from air; less carbon dioxide given out/carbon neutral/less global warming; saves fossil fuel reserves;			5
	Any five from: set-aside:	(only) takes carbon dioxide from air/photosynthesis; creates/provide habitats; increased/maintains biodiversity/range of species/plants/animals	[5]		
			Total		45