



Rewarding Learning

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

Science: Single Award (Modular)

Human Activity and Health
Module 2

Higher Tier

[GSC22]

**TUESDAY 15 MAY 2012
9.15 am–10.00 am**

**MARK
SCHEME**

- 1 (a) (i) Passive – injection of antibodies/mother’s milk;
Active – catching the disease/named disease/illness [2]
- (ii) passive immunity is faster acting;
passive immunity lasts for a shorter period of time/
not permanent [2]
- (b) (i) antibodies same shape/complementary to antigens; combine with
antigen/microbe; clump bacteria together/stop them spreading in
body [3]
- (ii) phagocytosis [1]
- 2 (a) (i) extent of ice platform decreases with time [1]
- (ii) ice platform decreases/less ice/ice melting; increased carbon
dioxide levels in atmosphere/traps heat; increased combustion/
deforestation/reduced photosynthesis [3]
- (b) (i) ice too thin (to support weight)/ice breaks/polar bears too
heavy [1]
- (ii) endangered/extinct [1]
- (iii) non-living factor [1]
- 3 (a) (i) tube A [1]
- (ii)
- | Action | Tick |
|--|--|
| Same type of broth used in all tubes | ✓ |
| Same volume of broth used in all tubes | neutral
(either
alternatives
allowed) |
| Tubes kept in darkness during the investigation | |
| Tubes kept in bright light during the investigation | |
| Tubes kept at the same temperature during the
investigation | ✓ |
| Tubes left for same length of time during the
investigation | ✓ |
- (all correct = 2; 1 mistake = 1) [2]
- (b) Fleming; observed that (substance diffusing from) fungus restricted
growth/killed bacteria; substance isolated/purified (*any two*) [2]

AVAILABLE
MARKS

8

7

5

			AVAILABLE MARKS	
4	(a)	(i) affects trees/fish (organisms in water or on land)/buildings	[1]	
		(ii) SO ₂ dissolves/(acid rain) forms in clouds; clouds move	[2]	
	(b)	(i) little difference between 15-20, 21-40, 41-60 groups; 60+ group lower	[2]	
		(ii) 10% decrease	[1]	
		(iii) nicotine	[1]	
	(c)	(i) cannot spray near water; no spraying in winter/closed periods; when plants can't grow/when too wet/rain forecast/frozen fields; efficient storage of fertiliser/slurry; prevents/reduces leaching/run-off into rivers (<i>any three</i>)	[3]	
(ii) growth of algae/harms/death of fish/eutrophication/affects taste/harmful to babies		[1]	11	
5	(a)	(i) better 'heads'/crop/better quality/better harvest; more profit; shorter plants/more even heights; easier to harvest/less likely to suffer wind damage;	[4]	
		(ii) Artificial selection is faster/caused by man	[1]	
	(b)	(i) Axis scaled = 1; all points accurately plotted = 2; (one error = 1; line accurately drawn point to point = 1	[4]	
		(ii) easier to process/harvest/package/more marketable	[1]	
6	<i>in vitro</i> testing is testing on cells/in laboratory; animal testing as whole body system/avoids human testing; (clinical) tests on patients/volunteers; for side effects/effectiveness (applies to 2nd or 3rd point)		[4]	4
Total				45