

Adaptations - Interdependence - Competition

Mark Scheme 1

Level	GCSE (9-1)
Subject	Combined Science – Trilogy - Biology
Exam Board	AQA
Topic	4.7 Ecology
Sub-Topic	Adaptations – Interdependence - Competition
Difficulty Level	Bronze Level
Booklet	Mark Scheme 1

Time Allowed: 58 minutes

Score: / 58

Percentage: /100

Grade Boundaries:

M1.(a)	producer	1	
	(b) predators	1	
	(c) 1200	1	
	(d) 2 (years)	1	
	(e) there is more food for wolves	1	
	(f) humans hunting	1	
	viruses	1	[7]
M2.(a)	Leaf	1	
	(b) Beetle	1	
	(c) Community		

		1	
(d)	Light intensity	1	
	Wind direction	1	[5]
M3.(a)	an extremophile species	1	
(b)	(i) smaller ice area <i>allow smaller amount of ice</i> <i>allow less ice</i>	1	
	(so) less habitat <i>allow fewer places to live / nest</i>	1	
	(ii) either increase as more sea to live in or as less competition for food or decrease as less space (ice) to lay eggs or predators more likely to eat them <i>there is no mark for increase / decrease alone. The mark is for an appropriate reason linked to increase / decrease</i> <i>if increase / decrease not ringed the mark may be awarded if it is clear in the explanation which is intended</i>	1	
(c)	Living organisms show long-term changes.	1	[5]

M4.(a) any **three** from:

- place 30-m tape measure across field / from one wood to the other
- place quadrat(s) next to the tape
- count / record the number / amount of dandelions / plants in the quadrat
ignore 'record the results'
ignore measures / estimates dandelions
- repeat every 2 metres
allow every metre / at regular intervals

3

- (b) (i) low light / it is shady
allow no light
ignore sun / rays

or

not enough water / ions / nutrients
accept correct named ion
ignore no water / ions / nutrients

or

wrong pH of soil
accept competition with trees for light / water / ions
ignore competition for space and competition unqualified
accept soil too acidic / too alkaline
ignore temperature

1

- (ii) sensible suggestion for a small area, eg chance variation / anomaly /
poisoned by animal waste / wrong pH of soil / eaten (by animals) / cut
down / footpath

1

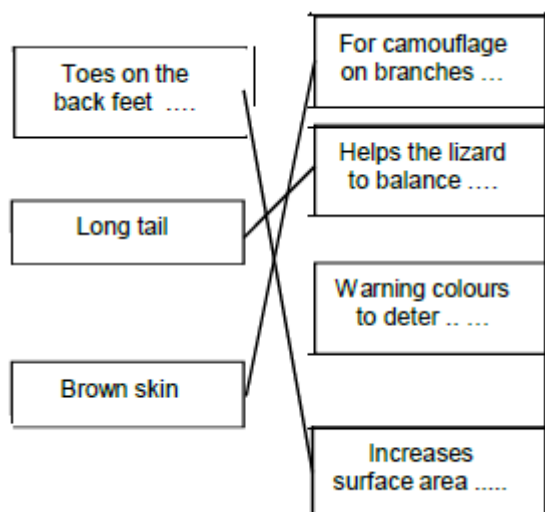
- (c) repeat (transect) / compare with the results of other groups
allow 'do it in two different locations' for 2 marks

1

at different / random location(s) / elsewhere (across the field)
*do **not** allow 'in other fields'*

1

[7]



M5.(a)

one mark for each line

do **not** award mark for an adaptation if lines are drawn from it to more than one advantage

3

(b) escape (predators)

accept faster than swimming

allow chase prey

allow it stops them from drowning

1

(c) food

1

territory

1

deduct **one** mark for each tick in excess of two

[6]

M6.(a) (i) any **two** from:

ignore oxygen / food / sun / carbon dioxide

- light
 - water
 - space
 - nutrients / ions / minerals / named
- accept two named minerals / ions for 2 marks*

2

(ii) less competition for water

ignore space / light / food

or

more water / nutrients / minerals available

1

(b) camouflage / same shape as leaf / looks like a leaf

allow 'blends in'

ignore colour

1

[4]

M7.(a) looks like a leaf

1

so predator less likely to / won't see it

allow 'camouflage' as alternative to either point

1

(b) (i) thorns (of acacia tree) hurt (predators)

*allow idea that fewer animals / predators live in trees **or**
ground living animals can't reach them (in the trees)*

1

- (ii) (giraffe) avoids being bitten by ants
allow ants are poisonous / have unpleasant taste

1

- (c) looks like / mimics a wasp **or** has warning colouration

1

so predators think it has a sting

1

[6]

M8.(a) C

1

- (b) B

1

- (c) E

1

- (d) D

1

- (e) F

1

[5]

M9. (a) brown (colour)

1

- (b) (long) ears

1

- (c) (long) horns

1

(d) (white) ring

1

[4]

M10. any **three** from:

ignore references to carbon cycle

accept digested / decomposed / broken down / rotted for decay throughout

ignore eating

- dead leaves / flowers / bluebells are decayed
- idea that microorganisms do the decaying
accept microbes / bacteria / fungi / mould / decomposers for microorganisms
- minerals / ions / nutrients / named released (by decay / microorganisms)
not mineral ions unqualified
- (released) into soil **or** minerals / ions / nutrients taken up / in by (bluebell) roots (next year)
look for idea that minerals / ions / nutrients are in soil (eg released into soil or taken up from soil)

3

[3]

M11. (a) *answer to be marked as a whole*

has thorns / prickles / points

accept sharp points

1

(these) hurt animal

allow frighten animal

only accept prevent animal eating leaves if qualified by 'hurting' or 'frightening'

1

(b) *answer to be marked as a whole*

camouflaged / looks like twig / disguised

allow blends in

ignore too small to see

1

(animal) cannot **see / detect** / recognise it

allow animal does not eat twigs

only accept prevents animal eating it if qualified by 'seeing'
or 'wrong food'

1

(c) *answer to be marked as a whole*

red / colour

1

warns that insect might be poisonous / dangerous

allow inedible / tastes bad

1

[6]