

- M1.** (a) snail  
**or**  
shrew  
*additional incorrect answer negates correct answer* 1
- (b) shrew  
*additional incorrect answer negates correct answer* 1
- (c) fewer shrews to eat them 1
- (d) population 1
- (e) **C** 1
- (f)  $(11\,000 \times 0.1 =)$   
1 100 (kJ) 1
- (g) the snails do not eat the roots of the lettuces 1
- (h) any **one** from:  
  - light (intensity)
  - temperature
  - moisture (levels)
  - soil pH
  - mineral / ion content (of soil)

- wind intensity / speed  
*ignore wind direction*
- carbon dioxide (levels)
- oxygen (levels)

1

[8]

- M2.** (a) large area  
*allow thin / large / big / flat / light*  
*allow adaptations that cannot be seen eg internal air spaces* 1
- (b) (shape means that) snow falls off 1
- (c) protect / stop it being eaten 1
- (d) stores/ absorbs water (from other parts of the plant)  
*ignore absorbs water from soil / air*  
*ignore nutrients* 1

**[4]**

- M3.** (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]

**M4.** 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]

**M5.** (a) brown (colour)

1

(b) (long) ears

1

(c) (long) horns

1

(d) (white) ring

1

[4]

**M6.** (a) C

1

(b) B

1

(c) E

1

(d) D

1

(e) F

1

**[5]**

**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

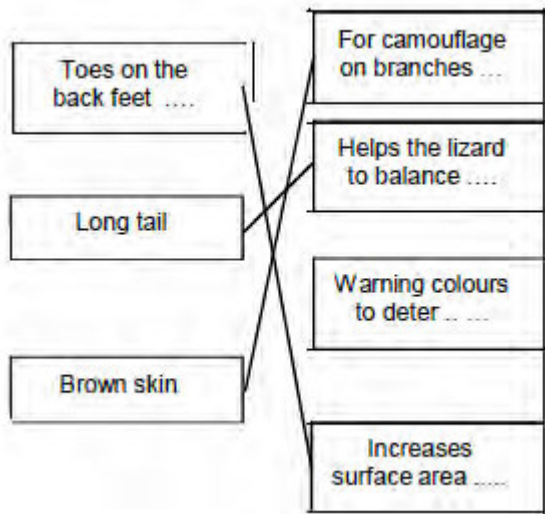
(c) looks like / mimics a wasp **or** has warning colouration

1

so predators think it has a sting

1

**[6]**



M8.(a)

*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]



- M9.** (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]**

**M10.(a)** an extremophile species 1

(b) (i) smaller ice area  
*allow smaller amount of ice*  
*allow less ice* 1

(so) less habitat  
*allow fewer places to live / nest* 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  
*there is no mark for increase / decrease alone. The mark is  
for an appropriate reason linked to increase / decrease  
if increase / decrease not ringed the mark may be awarded if  
it is clear in the explanation which is intended* 1

(c) Living organisms show long-term changes. 1

**[5]**

**M11.(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]