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 × 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 <u>see it</u>

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

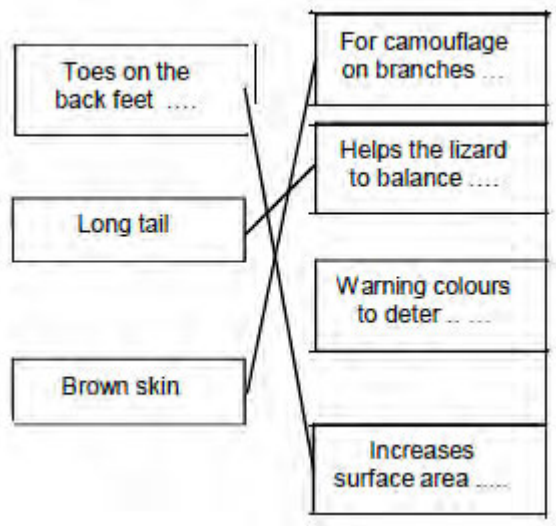
1

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]