**Q1.**

**Tree**

(a)   Ella is looking at some leaves.

|  |  |
| --- | --- |
| The key below identifies which tree each leaf comes from. |  |



|  |  |
| --- | --- |
| Look at this picture of a leaf from one of the trees. |  |

(i)   Use the key above to identify the tree it comes from.

  The leaf is from a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ tree.

1 mark

(ii)  Tick **ONE** box to show why it is useful to identify plants and put them into groups.



|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | so we know where to find a plant |  | because there is a large variety of plants |  |
|   | in case the plants become extinct |  | so we can observe the plants in their habitats |  |

1 mark

(b)  Complete the sentences below to show the function of the leaves and roots.

  (i)   The tree uses its leaves to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1 mark

(ii)  The tree has roots to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1 mark

(c)  Ella finds a seed.



Why does the tree need to produce seeds?

  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1 mark

(d)  Squirrels live in trees.



Give **ONE** feature of the **squirrel** from the picture.

Describe how this feature helps the squirrel to live in a tree.

  Feature of the squirrel that helps it live in a tree: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

How the feature helps: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1 mark

**Q2.**

**Plants on the school field**

(a)  Some children are finding out about plants. They get three buttercup plants. They put each plant in a place with different conditions.

After two weeks, the buttercup plants look like this:



Write **A**, **B**, and **C** in the table below to match each place to the conditions found there.





1 mark

(b)  There are differences between plants.

These differences help people sort plants into groups.

Write **true** or **false** next to each reason that explains why plants need to be sorted into groups.

|  |  |  |
| --- | --- | --- |
|  | Plants need to be sorted into groups... | **True** or **False**? |
|   | to stop plants becoming extinct. | \_\_\_\_\_\_\_\_\_\_\_\_ |
|   | to help people identify plants | \_\_\_\_\_\_\_\_\_\_\_\_ |
|   | to help plants reproduce. | \_\_\_\_\_\_\_\_\_\_\_\_ |

1 mark

(c)  The children look at different plants on the school field.

|  |  |
| --- | --- |
| They record the number of common plantain and buttercup plants in 1m2 in different places. |  |

The children think they see a pattern in the place that the plants grow.

The table shows their results.



Describe the relationship between **how many children** are playing in a place and the **number of common plantains** found there.

  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1 mark

(d)  The buttercup plant has a long thin stem.

The long thin stem of the buttercup plant stops it surviving in places where lots of children play. Explain why.

  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1 mark

**Q3.**

**Sea creature**

(a)     The picture shows the fossil of a pliosaur.

These animals lived in the sea a long time ago.



What material are fossils made of?

  ........................................................................................................................

1 mark

(b)     How did the fossil of the pliosaur form? Match each stage to order what happens.

**Stage                                                               What happens**

|  |  |  |
| --- | --- | --- |
| 1st |   | Soft parts decayed away. |
|   |   |   |
| 2nd |   | Hard parts were turned into fossils over many years. |
|   |   |   |
| 3rd |   | Hard parts were buried by many layers of sand. |
|   |   |   |
| 4th |   | The pliosaur died and sank to the sea bed. |

1 mark

(c)     Very few animals become fossils after they die.

Explain why very few animals become fossils after they die.

  1. ...................................................................................................................

2. ....................................................................................................................

1 mark

(d)     Fossils can give a lot of information about animals that lived in the past.

Write **true** or **false** for each statement about the pliosaur fossil.

The pliosaur’s fossil could give
us information about...

**True** or **false**?

how long ago the animal lived.               ......................................

what the animal ate.                                ......................................

what the animal smelt like.                     ......................................

what colour the animal’s eyes were.      ......................................

how large the animal was.                      ......................................

2 marks

**Q4.**

**Penguins**

(a)     The key below can be used to identify penguins.               



Use the key to identify the penguin below.



1 mark

(b)     Tick **ONE** box to show the best reason for identifying animals.



|  |  |  |  |
| --- | --- | --- | --- |
| so you can find out whatscientific group they are in |   | so you can comparethem with plants |   |
| so you can learn aboutthe country they live in |   | so you can measurehow tall they are |   |

1 mark

(c)     Look at the part of the penguins’ food chain below.



(i)      Tick **ONE** box to show which life process the food chain shows.



|  |  |  |  |
| --- | --- | --- | --- |
| movement |   | nutrition |   |
| growth |   | reproduction |   |

1 mark

(ii)     A fish is **not** a producer.

Explain why a fish **cannot** be a producer.

  ..............................................................................................................

..............................................................................................................

1 mark

(d)     Give **ONE** feature of a penguin and describe how it helps a penguin to live in its environment.



  Feature: ...................................................

How the feature helps: ...................................................................................

1 mark

**Q5.**

**Brine shrimps and flamingoes**

(a)     A **brine shrimp** is a tiny living thing. It lives in lakes and eats **algae** (green plants).



**Brine shrimp**

**Flamingoes** eat brine shrimps. They filter the shrimps from the water.
Look at the picture of the flamingo.



Describe one feature of the flamingo’s neck that helps the flamingo to feed.

  .....................................................................................................................

1 mark

(b)     Write the food chain for the three living things described above.





1 mark

(c)     The lakes dry up in hot weather and fill up again when it rains.
When the lake is dry the adult brine shrimps die, but the eggs do not.

Explain why it is important to the life cycle of brine shrimps that the eggs do **not** die when the lake dries up.

  .....................................................................................................................

.....................................................................................................................

1 mark

Mark schemes

**Q1.**

(a)  (i)   Award **ONE** mark for:

•  (Sweet) chestnut

**1**

(ii)  Award **ONE** mark for:

|  |  |  |  |
| --- | --- | --- | --- |
|   |  |   |  |
|   |  |   |  |

***Do not*** *give credit if more than one box has been ticked.*

**1**

(b)  (i)   Award **ONE** mark for a response stating that the leaves make new materials for growth or take in light, for example:

*The tree uses its leaves to…*

•  produce sugar/food (for growth)

•  absorb light

♦  Award **ONE** mark for a correct response that goes beyond the key stage 2 programme of study, for example:

•  take in/release CO2 / O2

•  release water

•  create/produce O2

•  store food/waste

•  respire/photosynthesise

•  absorb energy from the sun(light)

•  produce chlorophyll

***ONE*** *mark may be awarded for:*

*• make/give it food*

***ONE*** *mark may be awarded for:*

*• collect/gather/catch (sun)light*

***Do not*** *give credit for a response that includes incorrect science:*

*The tree uses its leaves to...*

*• make energy*

*• feed*

*• get/take in food (from the Sun)*

*• breathe in carbon dioxide/oxygen*

***Do not*** *give credit for an insufficient response, for example:*

*• produce/make/get nutrients*

**1**

(ii)  Award **ONE** mark for a response stating that the roots are used to anchor the plant in the soil **or** absorb water/minerals from the soil:

*The tree has roots to…*

•  absorb/take up/soak up water/moisture/minerals

***ONE*** *mark may be awarded for:*

*The tree has roots to…*

*• stabilise the plant (keep it steady)*

*• take in/get water/nutrients*

*• draw/drain water (from the soil)*

*• gather/collect water/nutrients*

*• carry water*

***ONE*** *mark may be awarded for a response indicating a supporting function of the roots which may work in conjunction with the stem, for example: The tree has roots to…*

*• support (the plant)*

*• hold it up*

*• make it stand straight/up*

***ONE*** *mark may be awarded for a response indicating that the roots can store water.*

***Do not*** *give credit for a response that includes incorrect science indicating that water is taken up by ‘drinking’ or ‘sucking’.*

***Do not*** *give credit for a response that includes incorrect science indicating that the root gives the plant food:*

*• take/send up/bring/gather/absorb food*

*• feed it*

*• for nutrients/moisture [not clear they are taken in]*

***Do not*** *give credit for an insufficient response, for example:*

*• the roots keep the plant balanced*

*• hold it in*

***Do not*** *give credit for a response that includes incorrect science indicating that roots produce nutrients.*

***Do not*** *give credit for an insufficient response where ‘goodness’ is used in place of ‘nutrients’, ‘water’ or ‘minerals’.*

**1**

(c)  Award **ONE** mark for a response indicating seeds are produced so the tree can reproduce, for example:

•  for reproduction/to reproduce

***ONE*** *mark may be awarded for a response describing or implying reproduction, for example:*

*• to grow/make more/new plants/trees*

***ONE*** *mark may be awarded for a response explaining the tree will not become extinct, for example:*

*• so the species survives*

***Do not*** *give credit for an insufficient response, for example:*

*• so they can be dispersed*

*• to produce the flowers*

*• because trees grow from seeds [does not imply more/new trees]*

*• to continue the cycle*

*• so the tree survives*

**1**

(d)  Award **ONE** mark for a response identifying a feature and describing how it helps the squirrel to live in a tree, for example:

•  (bushy) tail; it helps to keep balance

•  claws/long fingers and toes; to grip onto the branches/climb trees

•  (sharp) teeth; to eat nuts/seeds/fruits growing on trees

***ONE*** *mark may be awarded if the feature is given within the description, for example:*

*• feet; clawing feet grasp the tree for climbing*

***Do not*** *give credit for an insufficient response indicating hands or feet grip the tree, for example:*

*• hands/feet; grip tree/branches*

***Do not*** *give credit for an insufficient response, for example:*

*• fur; keeps them warm in winter [this is not specifically needed for tree living]*

*• brown fur; for camouflage*

*• good climber; helps it escape from predators/eat nuts*

*• eat nuts/seeds; these grow in trees*

*• hands/feet; climb/hold nuts*

*• claws; for keeping balance*

**1**

**Q2.**

(a)  Award **ONE** mark for:



**1**

(b)  Award **ONE** mark for:

|  |  |
| --- | --- |
| *to stop plants becoming extinct.* | **false** |
| *to help people identify plants.* | **true** |
| *to help plants reproduce.* | **false** |

**1**

(c)  Award **ONE** mark for a general comparison describing the relationship between the **number of children** playing in an area and the **number of common plantains** found there, for example:

•  the fewer children playing in a place, the lower the number of common plantains found there

•  the more children (playing in a place), the more common plantains (found there)

•  the bigger the number of common plantains found, the more children play there

***ONE*** *mark may be awarded for two specific comparisons describing the relationship, for example:*

*• there are most common plantains where most children play and least common plantains where fewest children play*

***Do not*** *give credit for an insufficient response giving a single comparison of the variables, for example:*

*• many common plantains grow where lots of children play*

***Do not*** *give credit for a response that changes one or both variables, for example:*

*• the more plantains, the fewer buttercups*

**1**

(d)  Award **ONE** mark for an indication that the stem of the buttercup will break easily, for example:

•  the stem (is thin so it) breaks easily

•  the buttercup’s stem could break

***ONE*** *mark may be awarded for:*

*• it is less strong*

***Do not*** *give credit for an insufficient response which does not describe what may happen to the buttercup stem specifically:*

*• it could get trodden on*

***Do not*** *give credit for an insufficient response:*

*• it gets squashed [smaller plants also get squashed but survive]*

**1**

**Q3.**

(a)     Award **ONE mark** for correctly naming a material, eg:

•        minerals

•        stone/rock (for fossil casts).

**Give credit** for responses that go beyond key stage 2 naming a
sedimentary rock that may contain fossils, eg:

•        sandstone

•        mudstone.

*Do not give credit for an insufficient response that does not indicate an animal has undergone**fossilisation, eg:*

*•    bone*

*•    teeth.*

**1**

(b)     Award **ONE mark** for correctly matching each stage to what happens during the formation of a fossil of the pliosaur:

    **Stage                                                                      What happens**

****

**1**

(c)     Award **ONE mark** for an explanation that identifies that most dead animals will decay before they have a chance to be buried or that many animals do not have skeletons or hard parts that can be fossilised:

•        lots of animals decay before they are buried (and so cannot become preserved/fossilised)

•        many animals do not die in places/environments where they could be buried and fossilised (eg in lakes, shallow seas, sandy deserts)

•        many organisms do not possess hard parts (that are easily fossilised).

***ONE mark*** *may be awarded for:*

*•    dead animals may not get buried deep enough (to become surrounded in rock).*

**1**

(d)     Award **TWO** marks for correctly classifying all five statements:

•        how long ago the animal lived.                    **True**

•        what the animal ate.                                    **True**

•        what the animal smelt like.                          **False**

•        what colour the animal’s eyes were.           **False**

•        how large the animal was.                           **True**

**2**

**or**

If you are unable to award two marks, award **ONE** mark for correctly classifying four of the five statements.

**1**

**Q4.**

(a)     Award **ONE** mark for identifying the penguin correctly:

•    Galapagos penguin.

**1(L4)**

(b)     Award **ONE** mark for:

|  |  |  |  |
| --- | --- | --- | --- |
| •  so you can find out whatscientific group they are in |   |   |   |
|   |   |   |   |

**1(L5)**

(c)     (i)      Award **ONE** mark for:

|  |  |  |  |
| --- | --- | --- | --- |
| • |   | nutrition |   |
|   |   |   |   |

**1(L4)**

(ii)     Award **ONE** mark for an explanation that fish cannot make
their own food:

•    a fish eats other things (to live)

•    a fish cannot make its own food

•    a producer is a plant

•    a fish is not a plant

•    a fish is an animal

•    it is a consumer/predator.

**♦**       Give credit for a correct response that goes beyond the
key stage 2 programme of study:

•    the fish/it cannot photosynthesise.

***Do not*** *give credit for an insufficient response that describes the position of the fish in the food chain:*

*•    it is not the first thing in the food chain.*

***Do not*** *give credit for an insufficient response:*

*•    the fish cannot be a producer [given]*

*•    it is not green.*

**1(L4)**

(d)     Award **ONE** mark for a feature of a penguin **and** a description of
how it helps a penguin to live in its environment:

•    (thick) feathers
it keeps them warm

•    webbed feet
to allow them to swim/to walk on snow

•    streamlined shape
for swimming

•    layer of fat/blubber
it insulates them

•    a rounded body
reduces heat loss /allows it to slide on ice

•    white tummies/a black back
animals swimming underneath/above them cannot see them easily

•    flippers
they can pull themselves through the water

•    beak
to eat /catch fish.

***ONE*** *mark may be awarded for a feature of a penguin’s behaviour rather than its body which accurately describes how it may help the penguin to live:*

*•    huddling together keeps them warm.*

***ONE*** *mark may be awarded for a response confusing the penguins’ feathers with fur [specific knowledge of penguins’ anatomy is not required]:*

*•    fur/hair/thick coat to help keep them warm.*

***Do not*** *give credit for an insufficient response that identifies a feature of a penguin but omits or gives an insufficient explanation of how that feature helps the penguin live in its environment:*

*•    flippers in the water
     [does not describe how flippers help in water].*

***Do not*** *give credit for an insufficient response giving a generalised feature of many animals even when an appropriate explanation is given:*

*•    feet it helps them walk/balance*

*•    coat helps to keep it warm*

*•    arms to help swim.*

**1(L4)**

**[5]**

**Q5.**

(a)     Award **ONE** mark for an indication that the neck is long and/or flexible:

•    it is (long and) bendy;

•    it is flexible;

•    it is long;

•    it can reach out (to find food).

***ONE*** *mark may be awarded for:*

*•    the length (of the neck);*

*•    (it bends) to allow the beak to get in
     the correct position to feed;*

*•    it can stretch;*

*•    it is curly/bent.*

***ONE*** *mark may be awarded for a response that indicates that food passes from the mouth to the stomach, via the neck.*

***Do not*** *give**credit for an insufficient response which does not describe a property of the neck:*

*•    they do not have to bend over;*

*•    it is easier to feed;*

*•    they can put their head in the water.*

**1(L3)**

(b)     Award **ONE** mark for **all three** organisms in the correct order:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| algae |   | brineshrimp |   | flamingo |

***ONE*** *mark may be awarded for a food chain in which ‘green plants’ replace ‘algae’.*

***Do not*** *give**credit for an insufficient response naming ‘bird’ in place of ‘flamingo’.*

***Do not*** *give**credit for an insufficient response naming an organism from a different habitat.*

**1(L4)**

(c)     Award **ONE** mark for an understanding of the role of the eggs in the life
cycle of the brine shrimp or a response relating to the survival of the
population, rather than of the individual:

•    (if the eggs do not die), they can still hatch (when the lake fills with water);

•    (new) brine shrimps can still develop from the eggs (when the lake fills up);

•    it might prevent the species dying out/becoming extinct;

•    the brine shrimp population/species will survive;

•    if the eggs die, there will not be any brine shrimps (to reproduce).

***ONE*** *mark may be awarded for:*

*•    it will not die out [‘die out’ implies extinction of the
     population];*

*•    to carry on the life cycle;*

*•    more brine shrimps will grow (if the water dries up);*

*•    more brine shrimps will be produced/ can be born;*

*•    they can reproduce.*

***Do not*** *give**credit for an insufficient response implying the adult brine shrimp, rather than the population, continues to live or reproduce:*

*•    it helps the brine shrimps to live longer;*

*•    it can stay alive and live for a long time.*

***Do not*** *give**credit for an insufficient response which describes, without qualification, what happens if the eggs* ***do*** *die:*

*•    the brine shrimp will become extinct.*

***Do not*** *give**credit for an insufficient response that repeats given information without further explanation:*

*•    the adult dies but the eggs do not;*

*•    because the shrimp eggs can live in dried up water/on land;*

*•    because the lake will fill up again;*

*•    brine shrimp eggs do not dry up.*

**1(L5)**

**[3]**

 **[5]**