

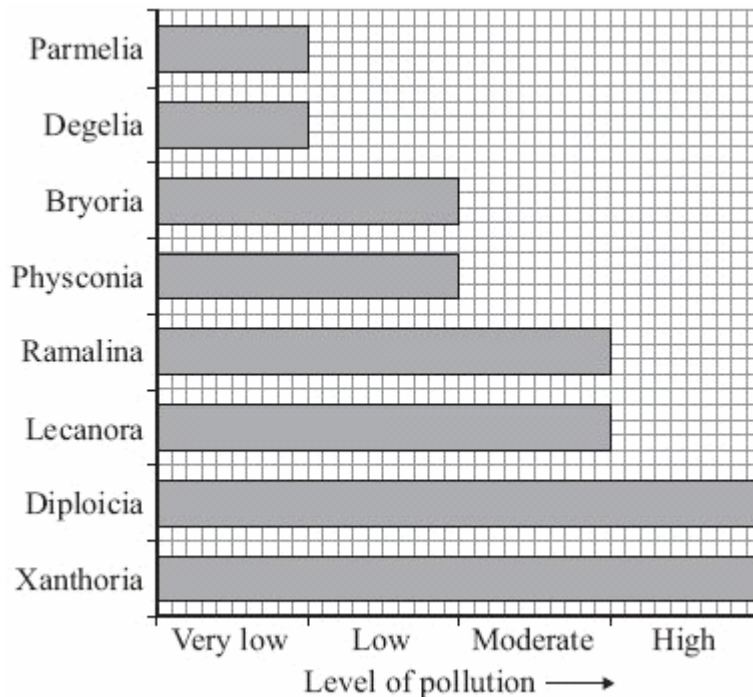
Environmental change

1. Organisms are adapted for survival in many different ways.
Match adaptations, **A, B, C** and **D**, with the numbers **1– 4** in the table.

- A** leaves are poisonous
- B** leaves have prickles
- C** blue skin with yellow spots
- D** white colour

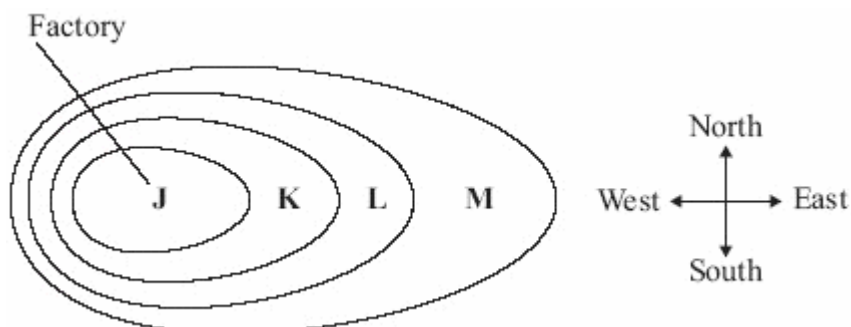
How adaptation helps survival	
1	camouflages an animal in the Arctic
2	warns birds not to eat it
3	hurts the mouth of animals that try to eat it
4	makes animals that eat it ill

2. The chart shows how much pollution different lichens can tolerate.



- (a) Which of the following lichens is most sensitive to pollution?
- 1** Degelia
 - 2** Diploicia
 - 3** Physconia
 - 4** Ramalina

The diagram shows the distribution of lichens around a factory which burns coal.



(b) In which direction does the wind blow the pollution?

- 1 towards the north
- 2 towards the east
- 3 towards the south
- 4 towards the west

(c) Which row in the table shows a correct distribution of lichens?

	Lichen in area J	Lichen in area K	Lichen in area L	Lichen in area M
1	Xanthoria	Diploicia	Parmelia	Ramalina
2	Ramalina	Degelia	Bryoria	Physconia
3	Degelia	Bryoria	Lecanora	Xanthoria
4	Xanthoria	Lecanora	Bryoria	Parmelia

(d) Lichens can be used to estimate levels of pollution from . . .

- 1 carbon dioxide.
- 2 methane.
- 3 pesticides.
- 4 sulfur dioxide.

3. In each part choose only **one** answer.

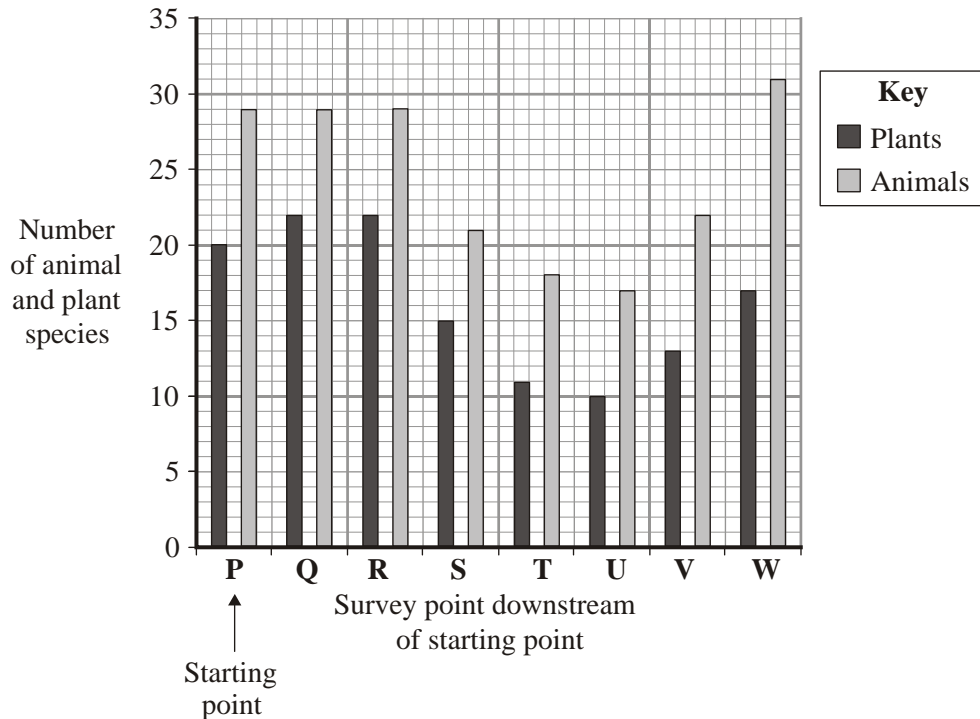
This question is about indicator species.

A Which one of the following is **not** a definition of an indicator species?

- 1 a species of animal or plant that may show a change in population due to environmental change
- 2 a species of animal or plant that may show a change in population due to pollution
- 3 a species whose population may fall in response to damage to the environment
- 4 a species of animal or plant whose population is affected only by changes in the population of another species

Unit B1, B1.4.2

The bar chart shows the results of a survey into the water quality of a river.



B Which part of the river is most likely to contain a source of pollution?

- 1 at R
- 2 between R and S
- 3 at S
- 4 between S and T

C Which row in the table is correct?

	Change in the number of plant species between points P and W	Change in the number of animal species between points P and W
1	-2	-2
2	+2	-3
3	-3	+2
4	+3	-3

D How could the results have been made more reliable?

- 1 repeating the survey at each point on the river
- 2 sampling more points on the river above starting point P
- 3 calculating the mean number of plants and animals at each point on the river
- 4 increasing the distance between each point

Unit B1, B1.4.2

4. In each part choose only **one** answer.

Professor John Lawton researches into the problem of controlling the spread of bracken. He is waiting for government permission to release the *Conservular* caterpillar which feeds on the bracken. The Secretary of State has to decide whether the *Conservular* caterpillar can be released.

The article printed below describes some of the problems faced by the Secretary of State.

David the caterpillar to bracken's Goliath

Bracken is one of the most widespread and dangerous weeds known to man.

Professor Lawton is researching a new method of controlling bracken with *Conservular* caterpillars which could have done the job for nothing.

His research has shown that bracken is the caterpillar's only food. However, can scientists predict what will happen when insects are released into the wild?

Bracken is poisonous – more than 20 000 sheep and 1000 cattle are poisoned by it each year. Its spores can cause hill walkers to develop cancer. Bracken cost £4 m a year to control. It destroys grazing land worth £5 m each year.

The National Farmers Union is concerned about the caterpillar getting out of control. What if it started eating potatoes? However, the caterpillar might help to preserve important habitats for rare animals and plants.

World-wide, scientists are trying to control 94 species of weeds by using insects. Professor Lawson says that there is good control in approximately one-third of these cases.

- A** A student performs an experiment to find whether caterpillars prefer eating garden ferns to bracken.

What would be the independent variable in this experiment?

- 1 the amount of plant eaten
- 2 the number of caterpillars
- 3 the number of plants
- 4 the types of plant

- B** How could the validity of the experiment be improved?

- 1 by increasing the number of caterpillars and the number of plants
- 2 by increasing the number of plants of each type
- 3 by increasing the number of types of caterpillar
- 4 by increasing the number of types of plant

- C** The Secretary of State might decide **not** to allow the caterpillar to be released.

One reason for this could be that . . .

- 1 it would cost too much money.
- 2 it would upset the National Farmers Union.
- 3 it would upset the Ramblers Association.
- 4 there is insufficient scientific evidence about the effects of releasing the caterpillar.

- D** What will be the effect on hill farms if the Secretary of State decides that the caterpillar should **not** be released?
- 1 Hill farms will become less profitable.
 - 2 More ramblers will use the countryside.
 - 3 Some hill farms will be turned into forests.
 - 4 There will be more grazing land for sheep on hill farms.