

Effects of humans on the ecosystem, pollution & conservation

Question Paper

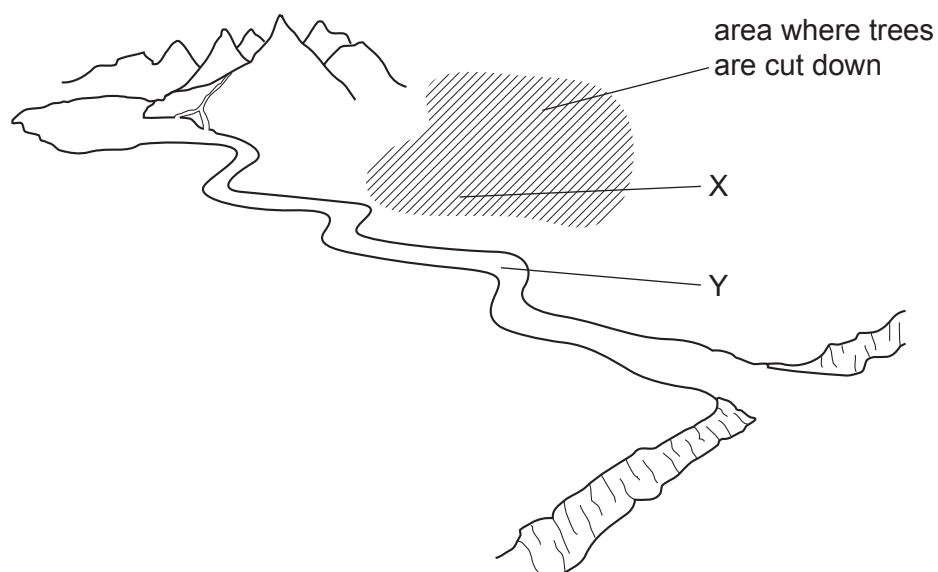
Level	O Level
Subject	Biology
Exam Board	Cambridge International Examinations
Topic	Relationships of organisms with one another and the environment
Sub Topic	Effects of humans on the ecosystem, pollution & conservation
Booklet	Question Paper

Time Allowed: 40 minutes

Score: /33

Percentage: /100

- 1 The diagram shows a river that flows down from the mountains to the sea. Trees are cut down and removed from the shaded area.



After a rainstorm, what is the effect on the nitrate ion content at X and at Y?

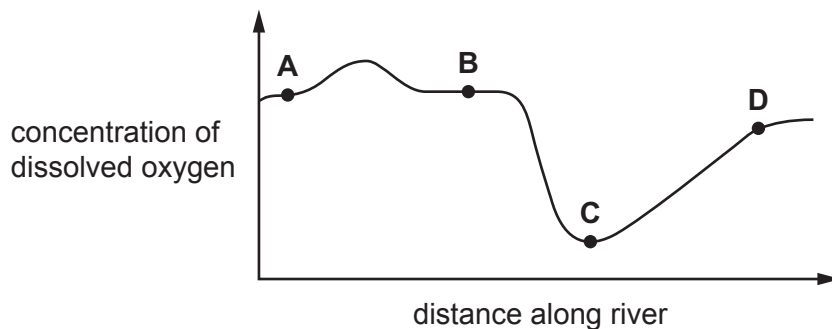
	nitrate ion content at X	nitrate ion content at Y
A	increases	increases
B	increases	decreases
C	decreases	increases
D	decreases	decreases

- 2 Which greenhouse gas is released from factory chimneys and by herbivores?

- A** carbon dioxide
- B** nitrogen
- C** nitrogen dioxide
- D** sulfur dioxide

3 The graph shows the concentration of dissolved oxygen at different points along a river.

At which point is sewage emptied into the river?



4 Which row shows a cause and an effect of eutrophication?

	cause	effect
A	the overuse of insecticides	an algal bloom in ponds and streams
B	the release of fertilisers	acidification of the atmosphere
C	the release of oxides of nitrogen	warming of the atmosphere
D	the release of sewage	anaerobic conditions in ponds and streams

5 What would be **least likely** to cause famine?

- A** decrease in human population
- B** decrease in rainfall
- C** increase in human population
- D** increase in rainfall

6 An ocean is polluted by an oil spill.

What is **least** likely to speed up the rate of decomposition of oil by microorganisms?

- A** aerobic conditions
- B** mixing by wave action
- C** presence of salt water
- D** spraying the surface of the sea with warm water

7 Some effects of deforestation are listed.

- 1 less absorption of carbon dioxide from the atmosphere
- 2 desertification
- 3 release of carbon from soil and decaying wood by action of microorganisms
- 4 soil dryness
- 5 flooding, landslides and soil erosion

Which effects contribute to **causing** climate change?

- A** 1 and 3 **B** 1 and 5 **C** 2 and 3 **D** 2 and 4

8 The list shows some changes that may occur in a lake that is polluted with nitrogen-containing fertiliser.

- 1 Concentration of oxygen decreases.
- 2 Decomposers feed on plants.
- 3 Green microorganisms grow and cover the surface.
- 4 Plants die.

In which order do these changes occur?

- A** 1 → 2 → 3 → 4
B 2 → 1 → 4 → 3
C 3 → 4 → 2 → 1
D 4 → 3 → 1 → 2

9 Which activities can lead to soil instability?

	deforestation	use of insecticides
A	✓	✓
B	✓	x
C	x	✓
D	x	x

10 Cutting down tropical rain forest trees has many consequences.

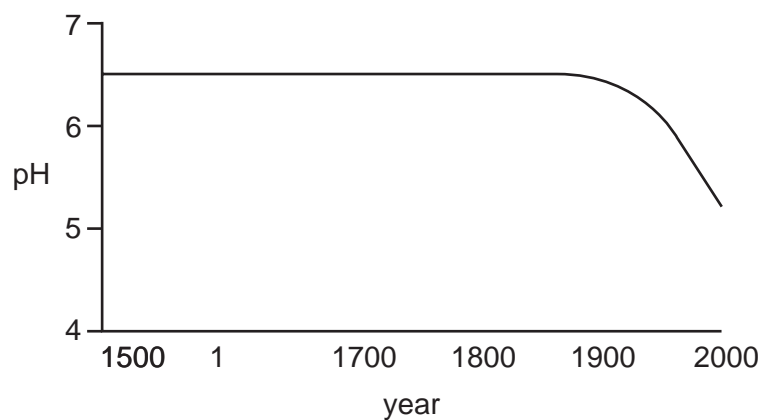
Which of these consequences could lead to global warming?

- A** fewer organisms decomposing
- B** fewer roots in ground
- C** less carbon dioxide absorbed
- D** soil eroded

11 What is **not** a consequence of global warming?

- A** reduction in sea level
- B** reduction in thickness of polar ice
- C** species migration to cooler habitats
- D** spread of deserts

12 The graph shows how the pH of a lake has changed in the period 1500 AD to 2000 AD.



What could have caused the change in the pH over the last 100 years?

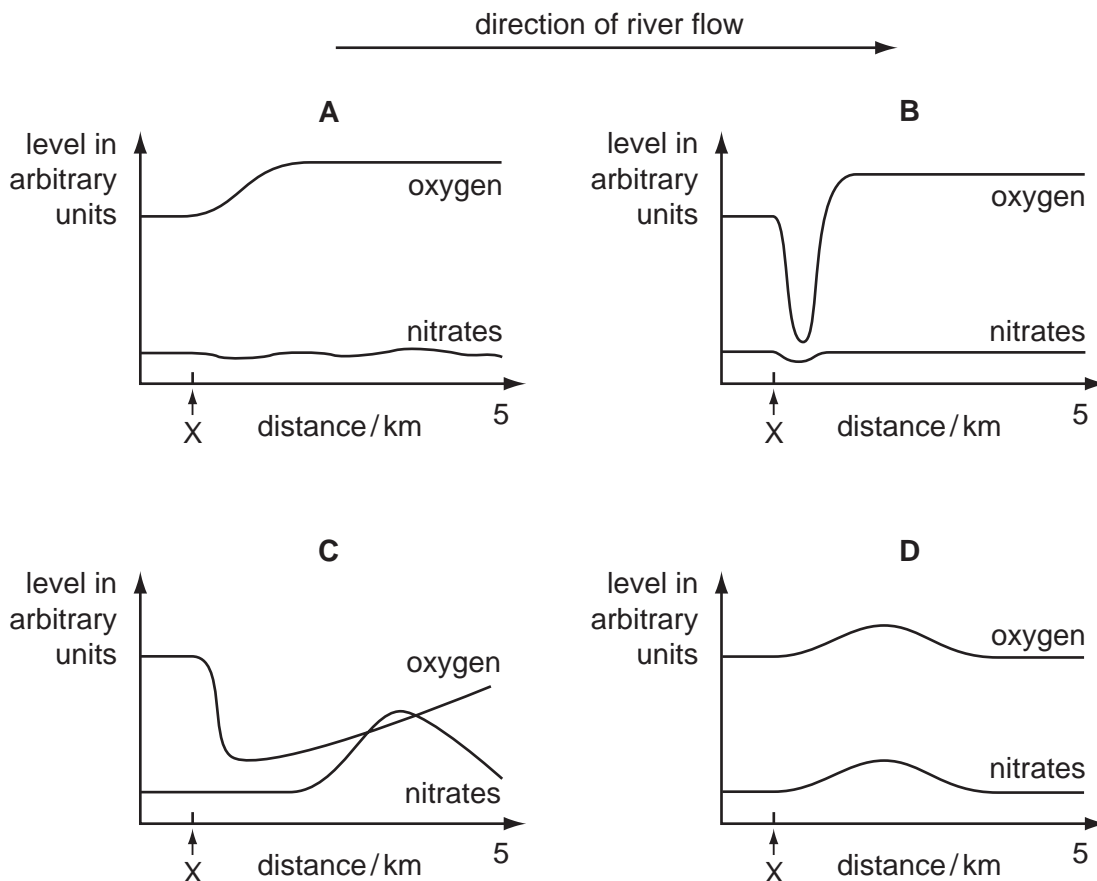
- A burning of fossil fuels in factories
- B conversion of nearby woodlands to agricultural land
- C increased growth of plants in the lake
- D use of insecticides on nearby fields

13 Which plants are most likely to adapt successfully to a climatic change in their environment?

- A plants that are cross-pollinated
- B plants that do not rely on wind-pollination
- C plants that grow rapidly
- D plants that reproduce asexually

14 The graphs show how the levels of dissolved oxygen and nitrates change along the length of a river.

Which graph shows the effect of sewage entering the river at the point marked X?



15 A farmer spread inorganic fertiliser on his fields in a valley bordering a river. During heavy rainfall the fertiliser leached into the river. Several days later the fish in the river started to die.

Which sequence of events led to the death of the fish?

	plant growth in the river	number of dead plants	number of bacteria	amount of oxygen
A	+	+	+	–
B	+	+	–	–
C	–	–	+	+
D	–	–	–	+

key
 + = increases
 – = decreases

16 If high levels of nitrates are washed into rivers, the following changes may occur, causing fish to die.

- 1 Water plants die and fall to the bottom.
- 2 Bacteria multiply rapidly.
- 3 Concentration of oxygen in the water decreases.
- 4 Increased growth of single-celled water plants makes the water green.

In which order do these changes take place?

- A 1 → 4 → 3 → 2
- B 2 → 3 → 1 → 4
- C 3 → 2 → 4 → 1
- D 4 → 1 → 2 → 3

17 What is **not** a result of changing the size of the holes in fishing nets?

	smaller holes	larger holes
A	bigger fish are caught	small fish pass through the net
B	many fish reproduce before they are caught	most fish do not reproduce
C	more fish are caught	fewer fish are caught
D	smaller fish are caught	larger fish are caught

18 Why is it important to control the amount of nitrate fertiliser used on farm land?

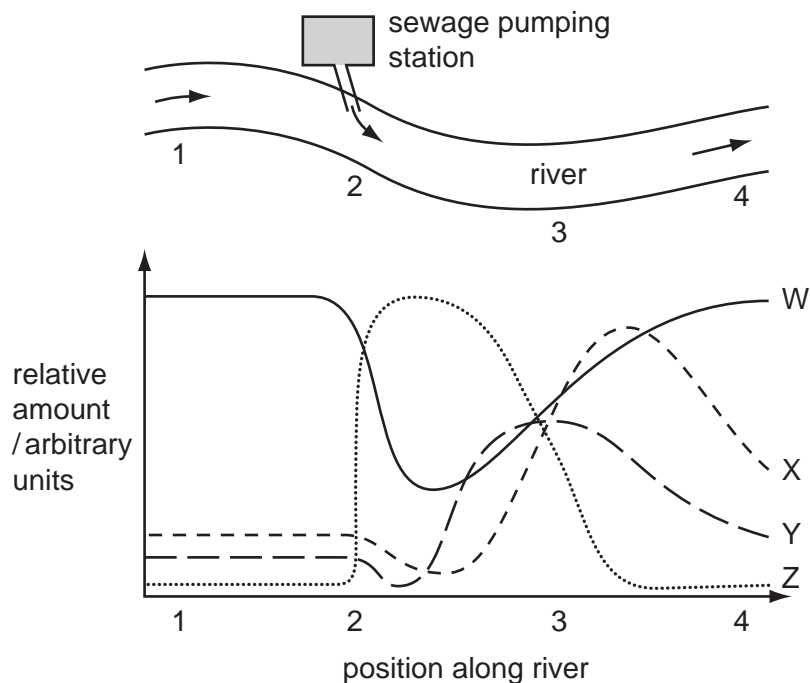
- A Nitrate causes acid rain which kills trees and fish.
- B Nitrate decreases the fertility of the soil.
- C Nitrate may lead to excessive growth of water plants.
- D Nitrate poisons many kinds of crop plants.

19 What would be an **undesirable** feature in an insecticide?

- A It becomes more concentrated at each stage in the food web.
- B It breaks down within a few months.
- C It destroys one particular insect only.
- D It destroys the immature forms of the insect.

20 The diagram shows part of a river into which sewage is being pumped.

Some of the effects of adding sewage to the river are plotted in the graph.

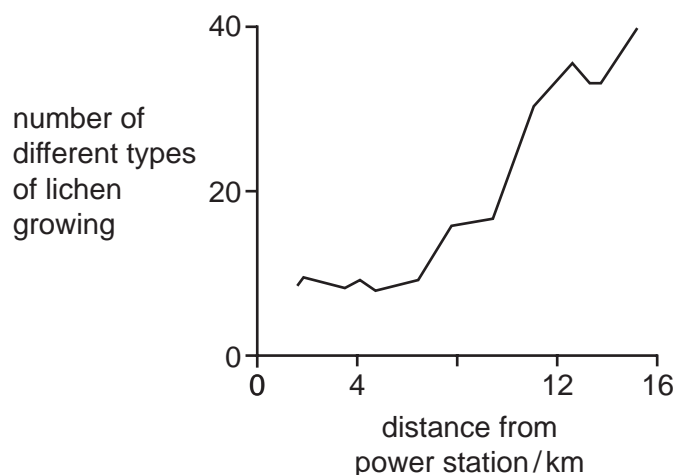


Which graphs represent the bacteria and the oxygen content of the water?

	bacteria	oxygen
A	W	Y
B	X	Z
C	Y	X
D	Z	W

21 Lichens are organisms which are very sensitive to air pollution.

The graph shows how the distance from a coal-fired power station affects the number of different types of lichen growing.



Which conclusion can be drawn from this information?

- A Lichens grow faster near the power station.
- B Lichens grow more slowly near the power station.
- C Sulfur dioxide from the power station inhibits the growth of lichens.
- D There are fewer different types of lichen growing near the power station.

22 Cutting down large areas of tropical forest can lead to a reduction in rainfall.

What is the reason for the reduction in rainfall?

- A a reduction in photosynthesis
- B a reduction in transpiration
- C an increase in flooding
- D an increase in respiration

23 In recent years, important rivers in many parts of the world have become more acidic.

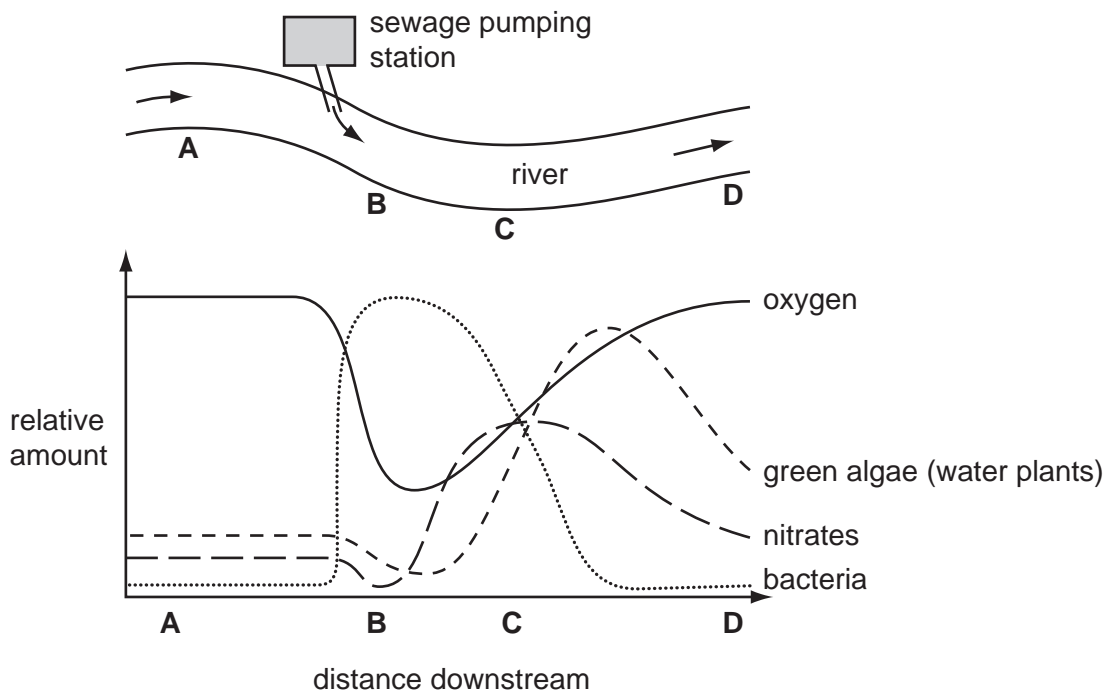
What has caused this change?

- A air pollution by sulphur dioxide
- B deforestation
- C increased use of insecticides
- D increased use of nitrate fertilisers

24 The diagram shows part of a river into which sewage is being pumped.

Some of the effects of adding sewage to the river are shown in the graph.

At which point in the river are **decomposers** most active?

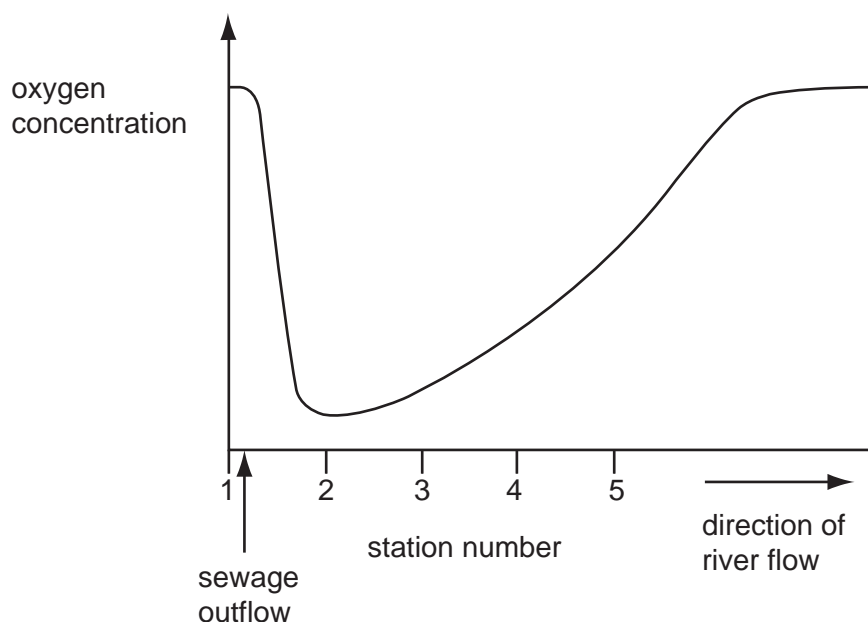


25 Many rivers are becoming clogged up by rapidly growing plants due to high levels of soluble nitrates.

Which is the main source of these nitrates?

- A decay of animals
- B denitrification by bacteria
- C drainage of fertilisers
- D pollution from the atmosphere

26 The graph shows the concentration of oxygen in a river, measured at stations 1 to 5, each 100 m apart. There is a sewage outflow just after station 1.



At which stations are the concentrations of organic matter **lowest**?

- A 1 and 5
- B 2 and 3
- C 3 and 4
- D 4 and 5

27 The presence of high concentrations of nitrogen-containing fertilisers in a pond can lead to the death of fish.

What is the sequence of events leading to the death of the fish?

A	increase in algae	algae die	increase in bacteria	drop in oxygen
B	increase in algae	drop in oxygen	increase in bacteria	algae die
C	increase in bacteria	drop in oxygen	increase in algae	algae die
D	increase in bacteria	increase in algae	algae die	drop in oxygen

28 Pest control in hot countries includes these processes.

- 1 draining ponds
- 2 keeping cattle away from ponds
- 3 spraying oil on ponds

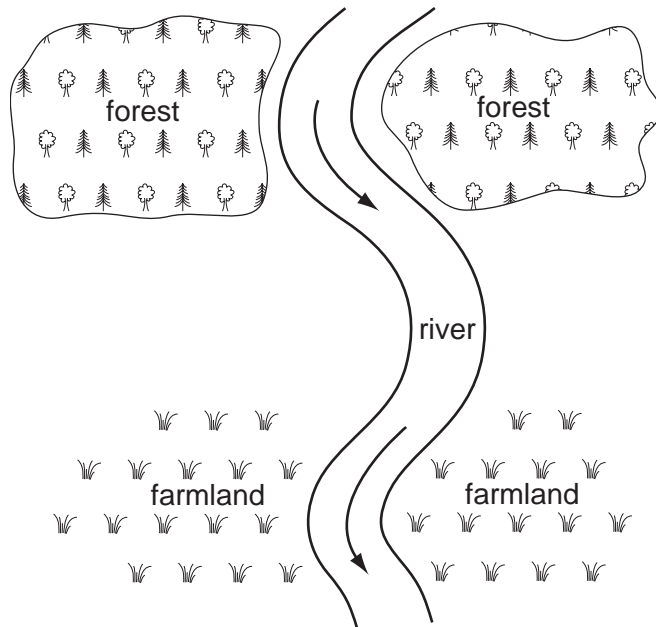
Which are used to control the malarial mosquito?

- A** 2 only **B** 1 and 2 **C** 1 and 3 **D** 1, 2 and 3

29 What will be the effect of increasing nitrate levels in rivers?

- A** Animals will absorb the nitrates and make more urea.
- B** Animals will absorb the nitrates and form more proteins.
- C** Plants will absorb the nitrates and make more urea.
- D** Plants will absorb the nitrates and form more proteins.

30 The diagram shows a forest and farmland either side of a river.



The forest is cut down.

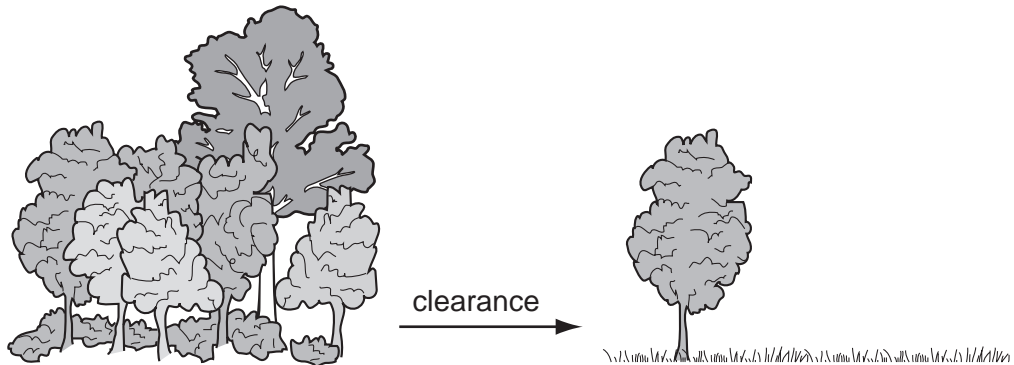
What will be the most likely effect and how it is connected to the cutting down of the forest?

	likely effect	how it is connected to the cutting down of the forest
A	flooding of the farmland	water running off cleared area
B	gradual change to desert conditions	global warming
C	increase in number of water plants	more light falling on river
D	water logging of cleared area	trees no longer transpiring

31 Which shows a result of deforestation and the effect it has on the environment?

	result	effect
A	fewer flowering plants	reduced CO ₂ in air
B	fewer trees	increased humidity of air
C	more ground cover	wind removes soil
D	more water drains away	soil washed away

32 The diagram shows a tropical forest before and after clearing for agricultural use.



Which of the effects of deforestation causes soil erosion?

- A Less photosynthesis occurs.
- B Rainfall is reduced.
- C Roots of trees die.
- D Salt concentration in the soil decreases.

33 The population sizes of four different species of insect were monitored over a period of 40 years. The results are shown on the graph.

Which species is in the greatest danger of extinction?

