

Human influences on ecosystems – 2021 IGCSE 0610

1. **March/2021/Paper_12/No.35**

What is the principal source of energy input into food chains?

- A glucose
- B heat
- C soil
- D sunlight

2. **March/2021/Paper_12/No.36**

What would be the effect of cutting down forests, on the carbon dioxide concentration in the atmosphere?

- A Carbon dioxide concentration would fall because of less photosynthesis.
- B Carbon dioxide concentration would fall because of more photosynthesis.
- C Carbon dioxide concentration would rise because of less photosynthesis.
- D Carbon dioxide concentration would rise because of more photosynthesis.

3. **March/2021/Paper_12/No.37**

What is an example of a population?

- A all the arthropods in a pond
- B all the chital deer found in a forest
- C all the lions that lived from 1950–2000
- D all the flowering plants in a wood

4. **March/2021/Paper_12/No.38**

During the extraction of apple juice, ripe apples are crushed and the enzyme pectinase is added.

Which observation shows that pectinase has been used to produce the apple juice?

	volume of juice obtained / dm ³	appearance of the juice
A	0.6	cloudy
B	1.2	cloudy
C	0.4	clear
D	2.8	clear

5. **March/2021/Paper_12/No.40**

During the treatment of sewage, what is removed by screening?

- A bacteria
- B fats and grease
- C large plastics
- D urine

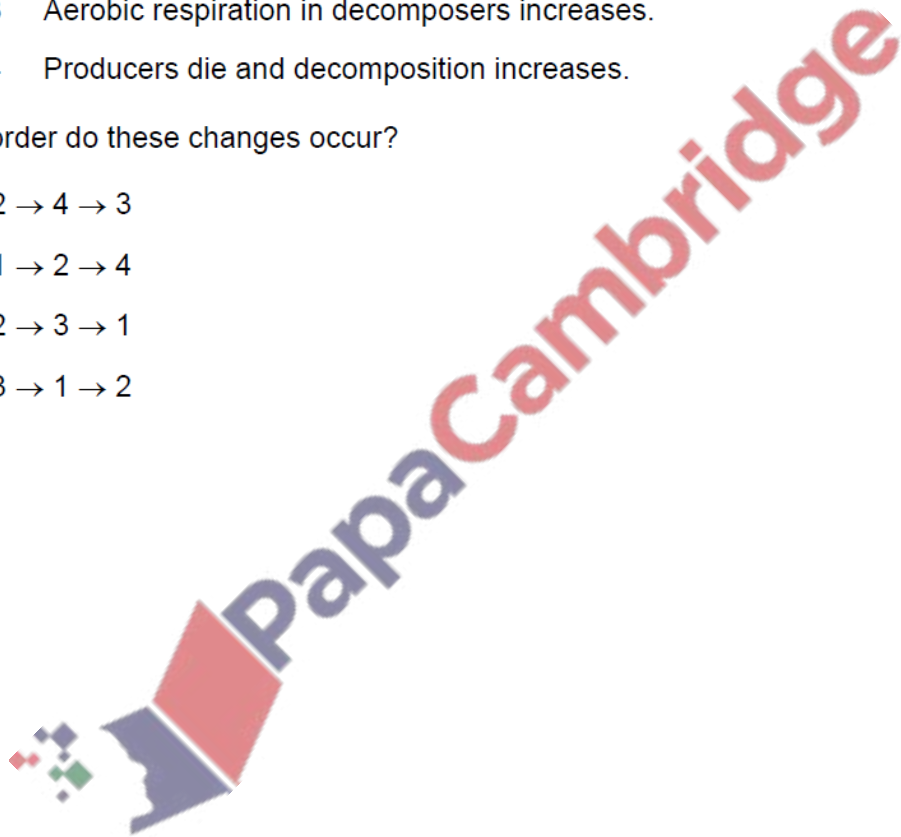
6. **March/2021/Paper_22/No.39**

When nitrates enter a lake they cause rapid growth of algae on the surface of the water. This causes the following changes in the lake:

- 1 The concentration of dissolved oxygen in the water decreases.
- 2 Fish and other aquatic animals die.
- 3 Aerobic respiration in decomposers increases.
- 4 Producers die and decomposition increases.

In which order do these changes occur?

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



7. June/2021/Paper_11/No.40

Which factors are believed to have contributed to the rise in sea levels?

- A pollution of the air by carbon dioxide only
- B pollution of the air by carbon dioxide and methane
- C pollution of the sea by plastics only
- D pollution of the sea by insecticides and nuclear fall-out

8. June/2021/Paper_12/No.40

An area of forest was destroyed by a forest fire. Eventually the forest regrew.

What is likely to happen to the amount of soil erosion and flooding when the forest has regrown?

- A Soil erosion increases and flooding increases.
- B Soil erosion decreases and flooding decreases.
- C Soil erosion increases and flooding decreases.
- D Soil erosion decreases and flooding increases.

9. June/2021/Paper_13/No.37

Human activities are changing the carbon dioxide concentration in the atmosphere.

Which activities will increase the carbon dioxide concentration in the atmosphere?

- 1 burning fossil fuels
- 2 burning cut-down trees
- 3 fossilisation of cut-down trees
- 4 planting replacement trees

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

10. June/2021/Paper_13/No.40

What happens when deforestation takes place?

- A The number of habitats is increased.
- B The number of species becoming extinct is increased.
- C The possibility of flooding is decreased.
- D The volume of soil present is increased.

11. June/2021/Paper_21/No.40

Which hormones can cause the feminisation of male fish?

- A adrenaline and progesterone
- B adrenaline and testosterone
- C oestrogen and progesterone
- D oestrogen and testosterone

12. June/2021/Paper_22/No.40

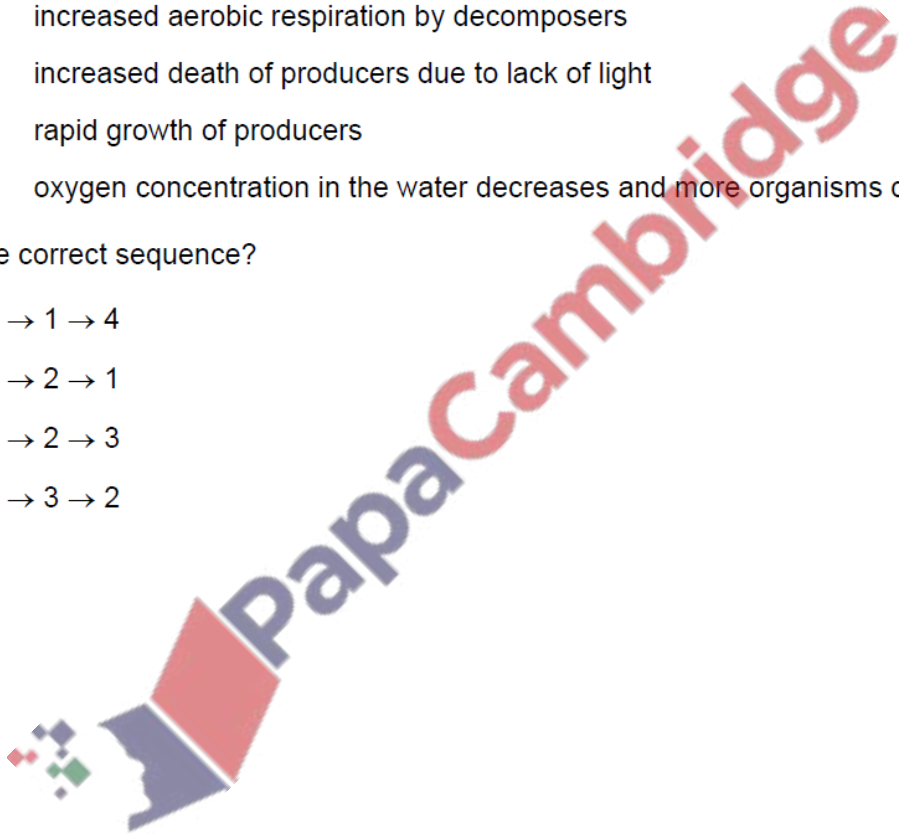
The process of eutrophication begins with the increased availability of nitrate ions and other ions in water.

The processes involved in eutrophication are listed.

- 1 increased aerobic respiration by decomposers
- 2 increased death of producers due to lack of light
- 3 rapid growth of producers
- 4 oxygen concentration in the water decreases and more organisms die

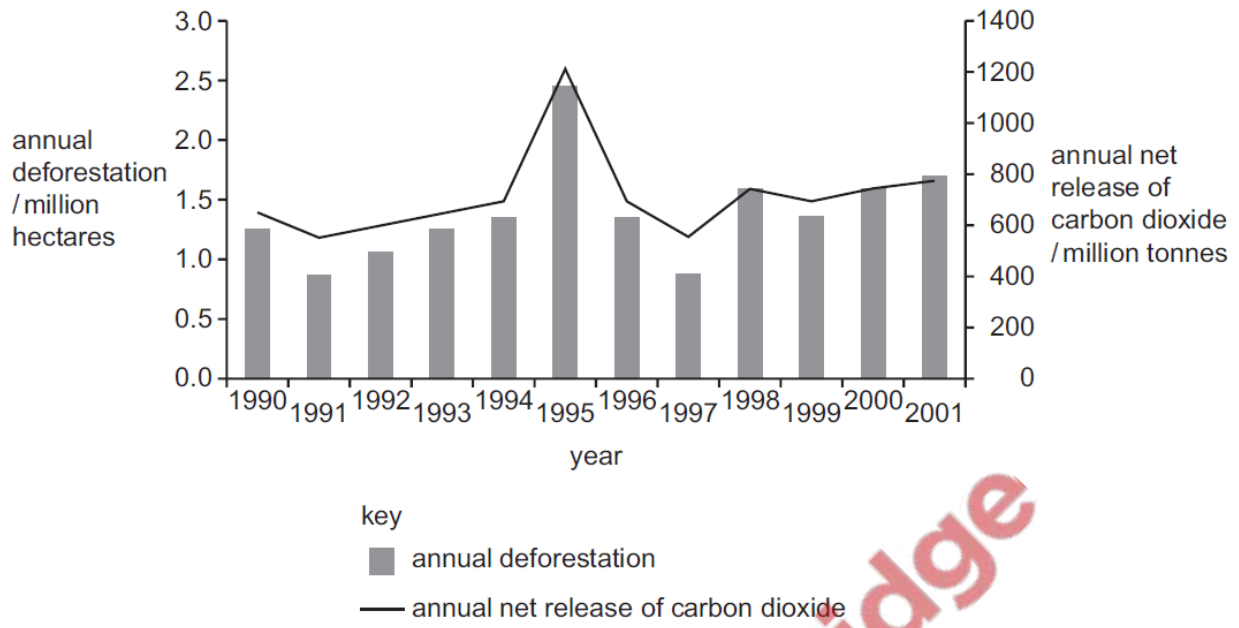
What is the correct sequence?

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



13. June/2021/Paper_23/No.40

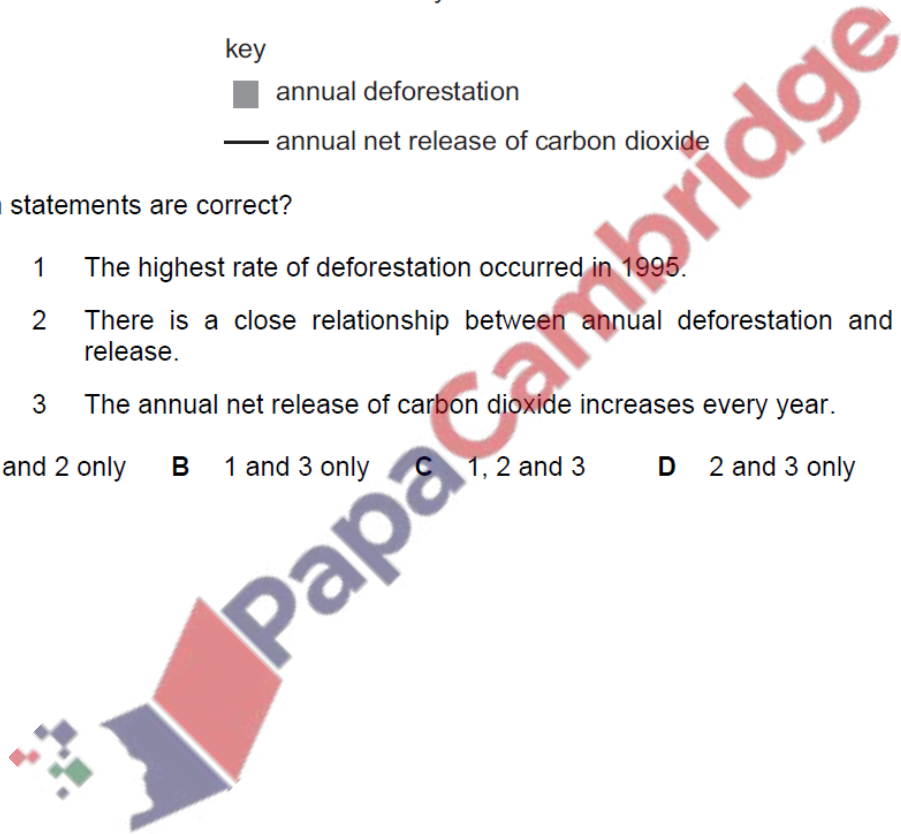
The graph shows the annual deforestation and annual net release of carbon dioxide from an area of tropical forest between 1990 and 2001.



Which statements are correct?

- 1 The highest rate of deforestation occurred in 1995.
- 2 There is a close relationship between annual deforestation and carbon dioxide release.
- 3 The annual net release of carbon dioxide increases every year.

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



(a) Modern technology has improved food production.

Table 7.1 shows some of the ways that food production has been improved.

Complete Table 7.1 by writing an example for each description.

Table 7.1

example of technology	description of how it has improved food production
	used to farm larger areas of land
	used to improve growth in plants by providing nutrients
	used to improve yield by removing animal pests
	used to remove competition by weeds

[4]

(b) Intensive livestock production is used to improve food production.

Describe the negative effects of intensive livestock production.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

[3]

(c) Selective breeding can be used to improve the yield of meat from livestock.

Sentences **A** to **E** in Table 7.2 describe the selective breeding of chickens to improve meat quantity.

The sentences are **not** in the correct order.

Table 7.2

Breed the chickens together.	A
Observe the chickens to identify those that will yield the most meat.	B
Observe the offspring and select the offspring that will yield the most meat.	C
Repeat the process over many generations.	D
Select one male and one female chicken.	E

Put the letters from Table 7.2 into the correct order.

One has been done for you.

		A		
--	--	----------	--	--

[2]

(d) Lack of food can affect the population size of animals in ecosystems.

State **two other** factors that could decrease population size.

1

2

[2]

[Total: 11]

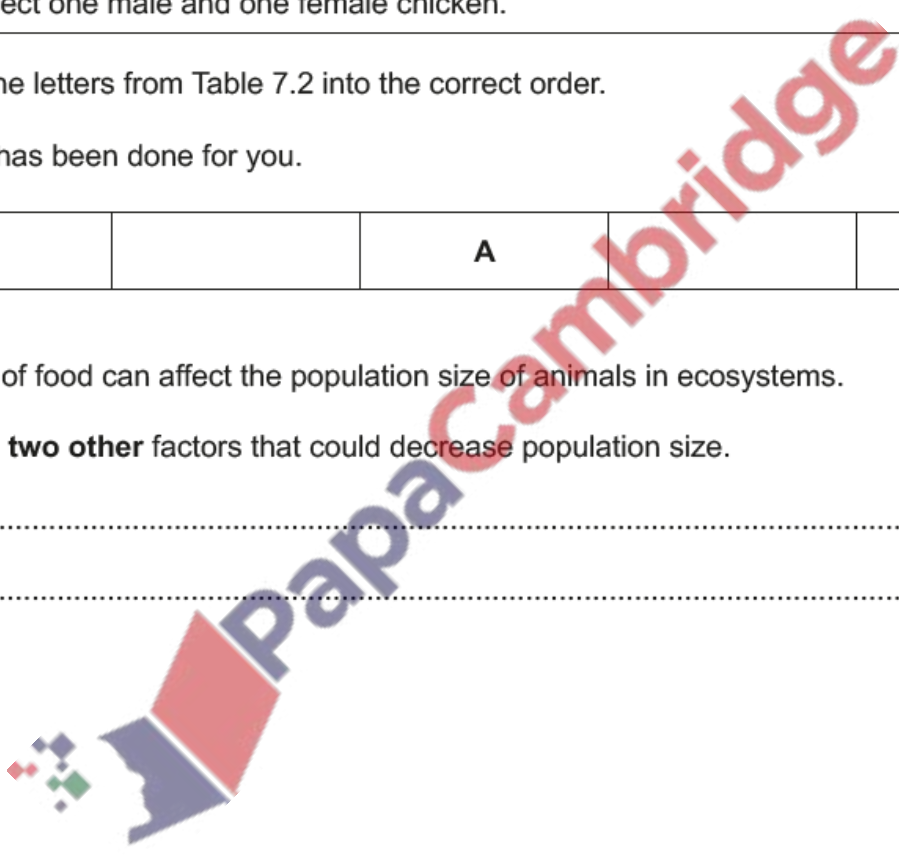


Fig. 8.1 shows an area of land where the trees have been cut down.



Fig. 8.1

(a) (i) List **three** undesirable effects of deforestation.

- 1
- 2
- 3

[3]

(ii) Deforested land may be used for growing monocultures of crop plants.

Describe the negative impacts to an ecosystem of large-scale monocultures of crop plants.

-
-
-
-
-

[2]

(b) Replanting trees in deforested areas can help to conserve endangered species.

Describe **two** other ways that endangered species can be conserved.

1

.....

.....

2

.....

.....

[2]

[Total: 7]

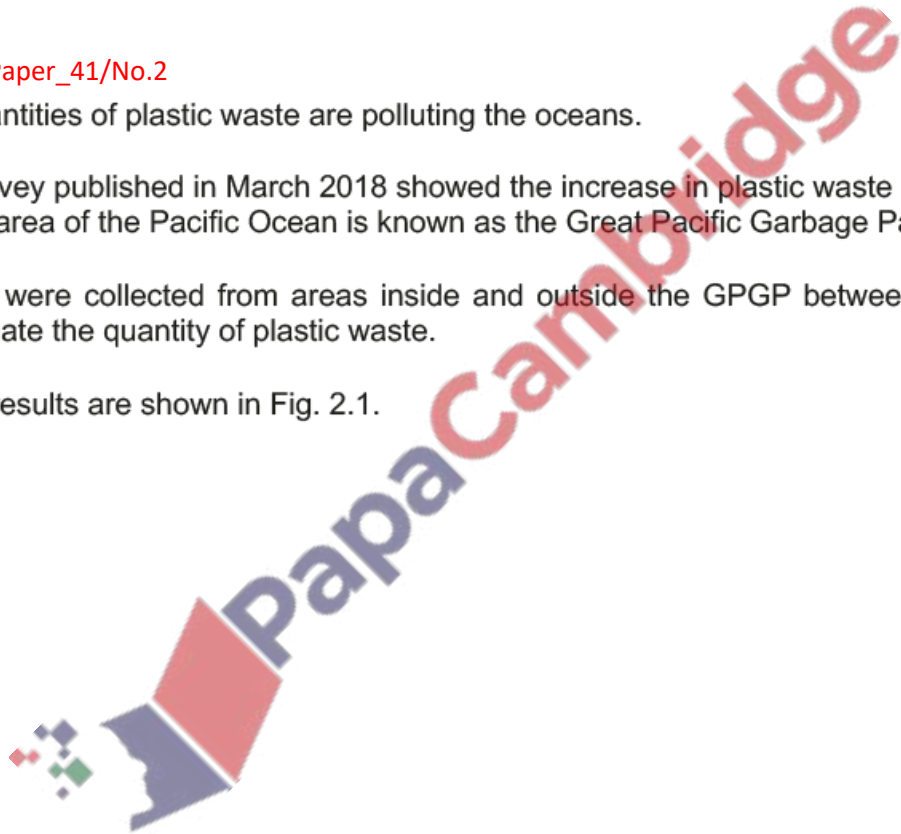
16. June2021/Paper_41/No.2

Large quantities of plastic waste are polluting the oceans.

(a) A survey published in March 2018 showed the increase in plastic waste in the Pacific Ocean. One area of the Pacific Ocean is known as the Great Pacific Garbage Patch (GPGP).

Data were collected from areas inside and outside the GPGP between 1965 and 2015 to estimate the quantity of plastic waste.

The results are shown in Fig. 2.1.



(b) The green turtle, *Chelonia mydas*, is a species of marine animal that is harmed by plastic waste.

Fig. 2.2 shows a green turtle swimming past a plastic bag in the Pacific Ocean.



Fig. 2.2

(i) Turtles are classified as reptiles.

State **one** feature shown by all reptiles that is **not** found in amphibians.

..... [1]

(ii) Outline the dangers of non-biodegradable plastic waste to marine animals, such as green turtles.

.....
.....
.....
.....
.....
.....
.....
.....
.....
..... [4]

(iii) Suggest ways to reduce the quantity of plastic waste.

.....

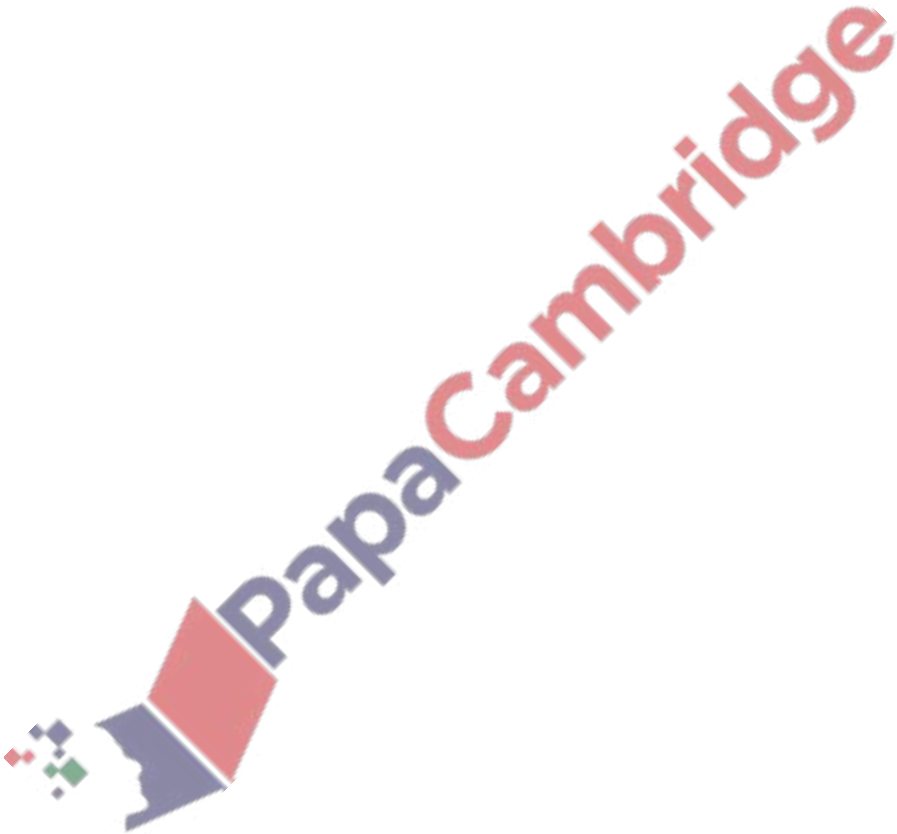
.....

.....

.....

..... [2]

[Total: 11]



(b) Seed banks are used to conserve endangered plant species.

Fig. 4.1 shows some of the steps involved in managing a seed bank.

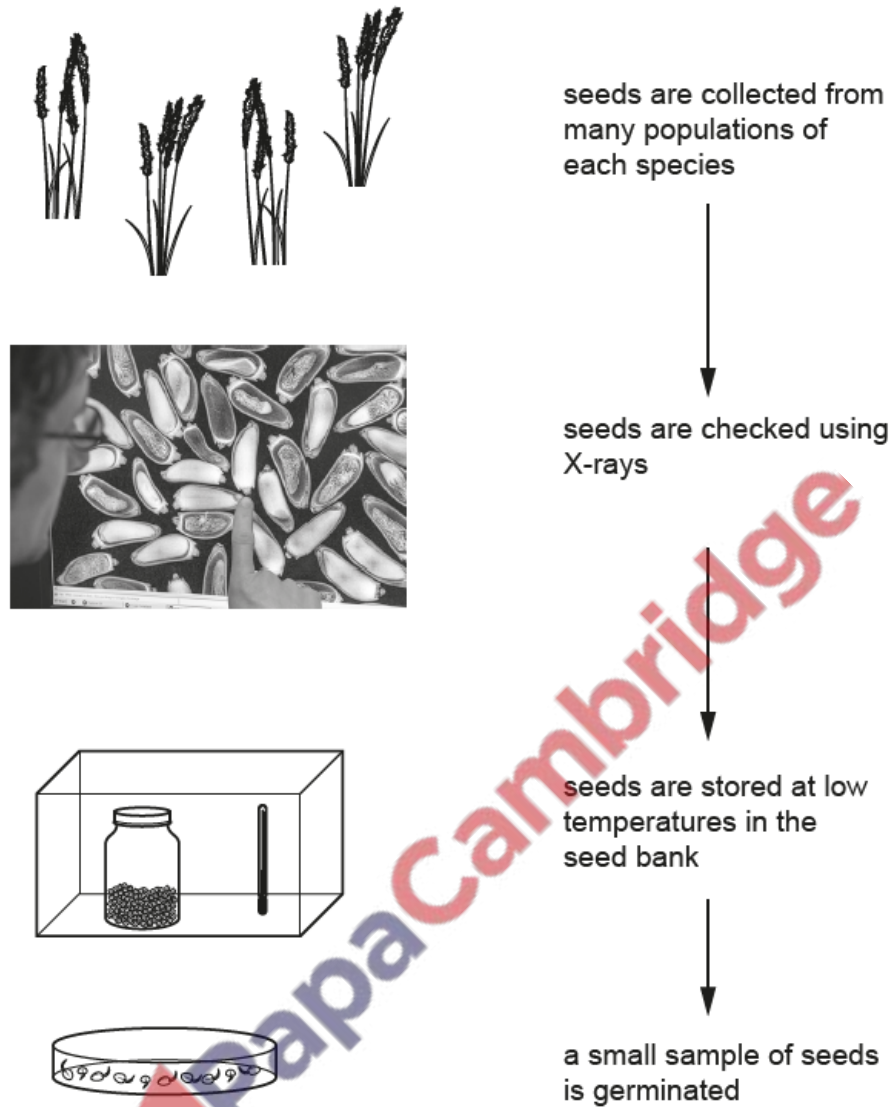


Fig. 4.1

(i) Explain why seeds from one species are collected from many populations to store in a seed bank.

.....

.....

.....

.....

.....

.....

.....

.....

.....

..... [3]

(ii) Seeds are X-rayed before they are stored to check that they contain an embryo.
State **one** possible consequence of using ionising radiation on seeds.

.....

..... [1]

(iii) Seeds stored at low temperatures have very low respiration rates.
Explain why.

.....

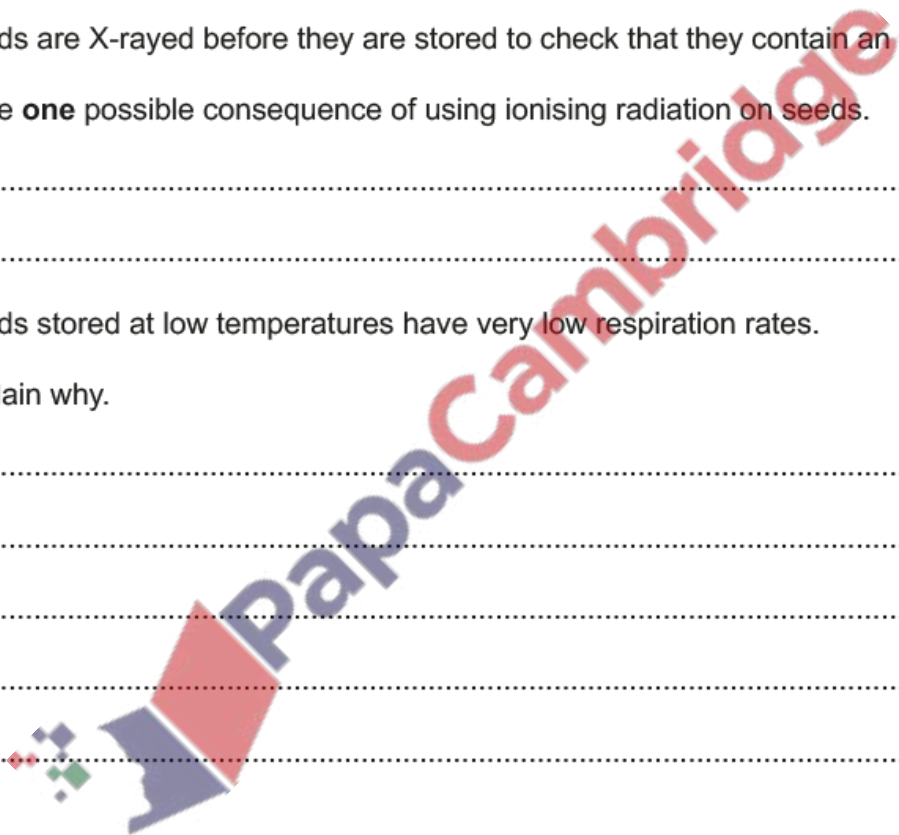
.....

.....

.....

.....

..... [2]



(c) One purpose of seed banks is to reintroduce plant species into their natural environment.

A survey was done to find out why some reintroduction programmes are not successful.

Fig. 4.2 shows the results of the survey.

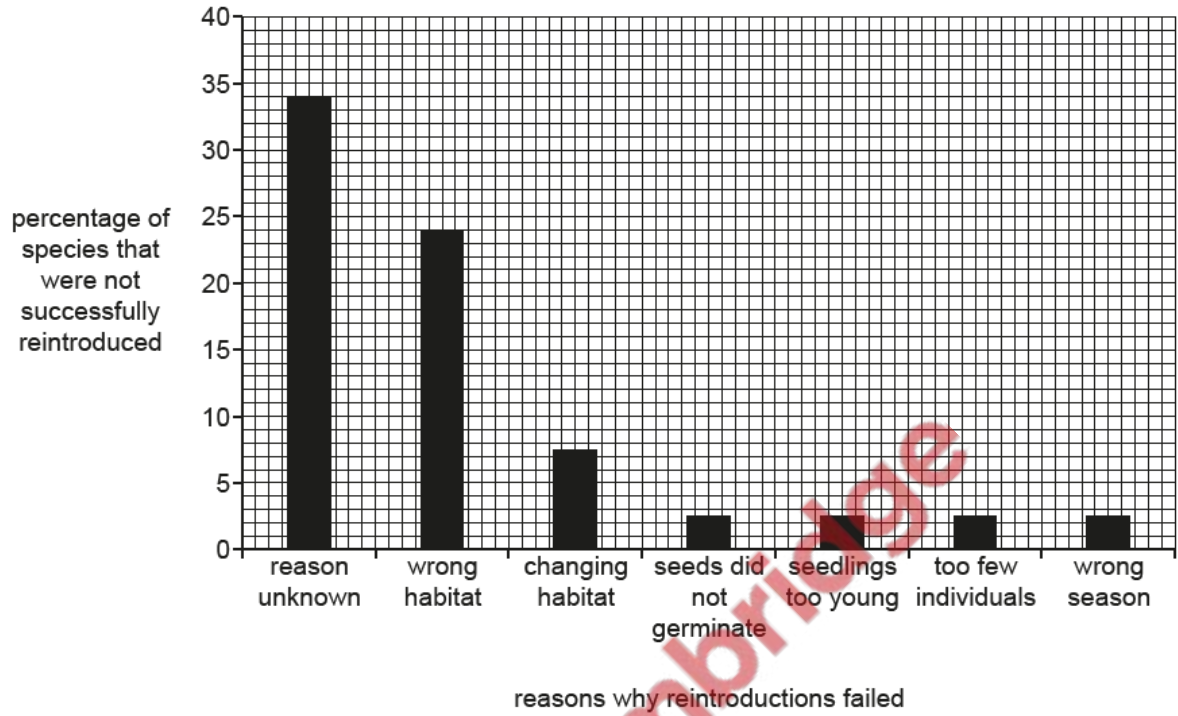


Fig. 4.2



(i) Some of the seeds in the reintroduction programmes did not germinate.

State the conditions that are necessary for seeds to germinate.

.....
.....
.....
..... [3]

(ii) Some reintroduction programmes failed because the seedlings were too young. Young seedlings only have a few small roots.

Explain why it would be important to reintroduce plants with many large roots.

.....
.....
.....
.....
.....
.....
.....
.....
.....
..... [4]

(iii) The low number of individuals also caused some reintroduction programmes to fail.

State the name of the phase in a population growth curve where the number of individuals is very low.

..... [1]

[Total: 21]

There are three species of rhinoceros in Asia. Fig. 4.1 shows an Indian rhinoceros, *Rhinoceros unicornis*, in a national park being observed by tourists who are riding on an elephant.



Fig. 4.1

The International Union for Conservation of Nature (IUCN) collects data on animal species and places them into categories based on estimated numbers.

Table 4.1 summarises the conservation status of the three species of rhinoceros, as available in 2020.

Table 4.1

species	location	approximate number in the wild	approximate number in captivity	IUCN category
Indian rhinoceros <i>Rhinoceros unicornis</i>	national parks in south Nepal and north India	3588	160	vulnerable
Javan rhinoceros <i>Rhinoceros sondaicus</i>	one national park in Java, Indonesia	72	0	critically endangered
Sumatran rhinoceros <i>Dicerorhinus sumatrensis</i>	national parks in Sumatra and Borneo in Indonesia	<80	7	critically endangered

(a) Outline the reasons why large mammals, such as some species of rhinoceros, are endangered.

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

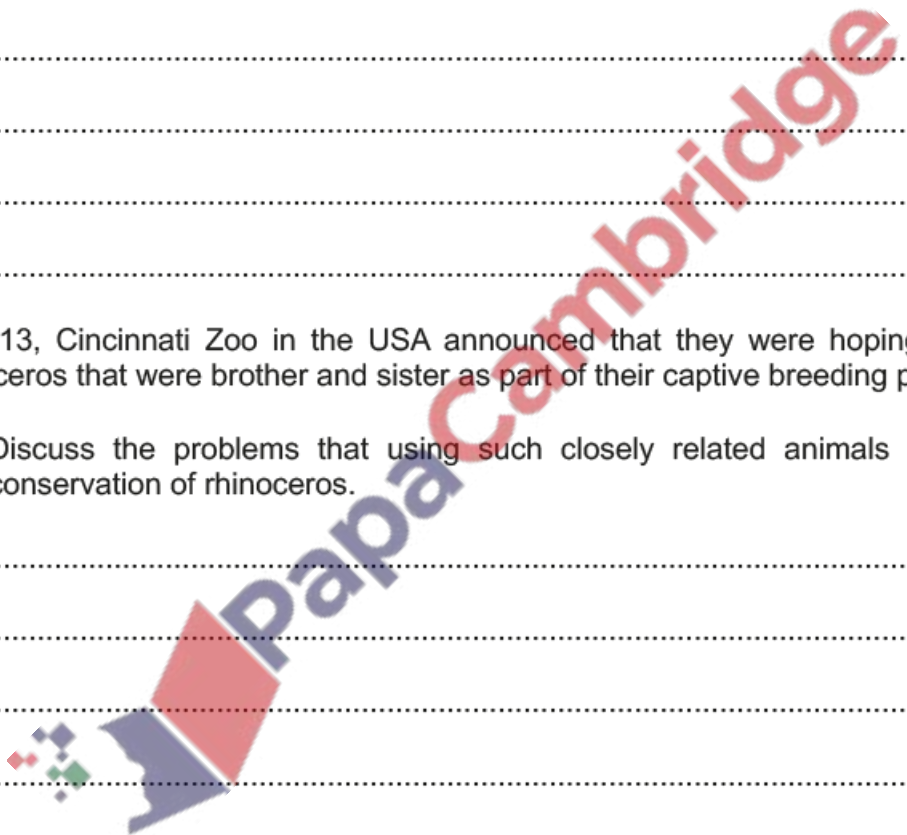
[5]

(b) In 2013, Cincinnati Zoo in the USA announced that they were hoping to breed together rhinoceros that were brother and sister as part of their captive breeding programme.

(i) Discuss the problems that using such closely related animals might have for the conservation of rhinoceros.

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

[2]



(ii) Captive breeding programmes often use artificial insemination.

Outline the process of artificial insemination.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

[3]

[Total: 10]

