Human influences on ecosystems – 2020 IGCSE 0610

1. March/2020/Paper_12/No.39

Which effect is **most** likely to occur as a result of deforestation?

A an increase in the number of species

B an increase in soil erosion

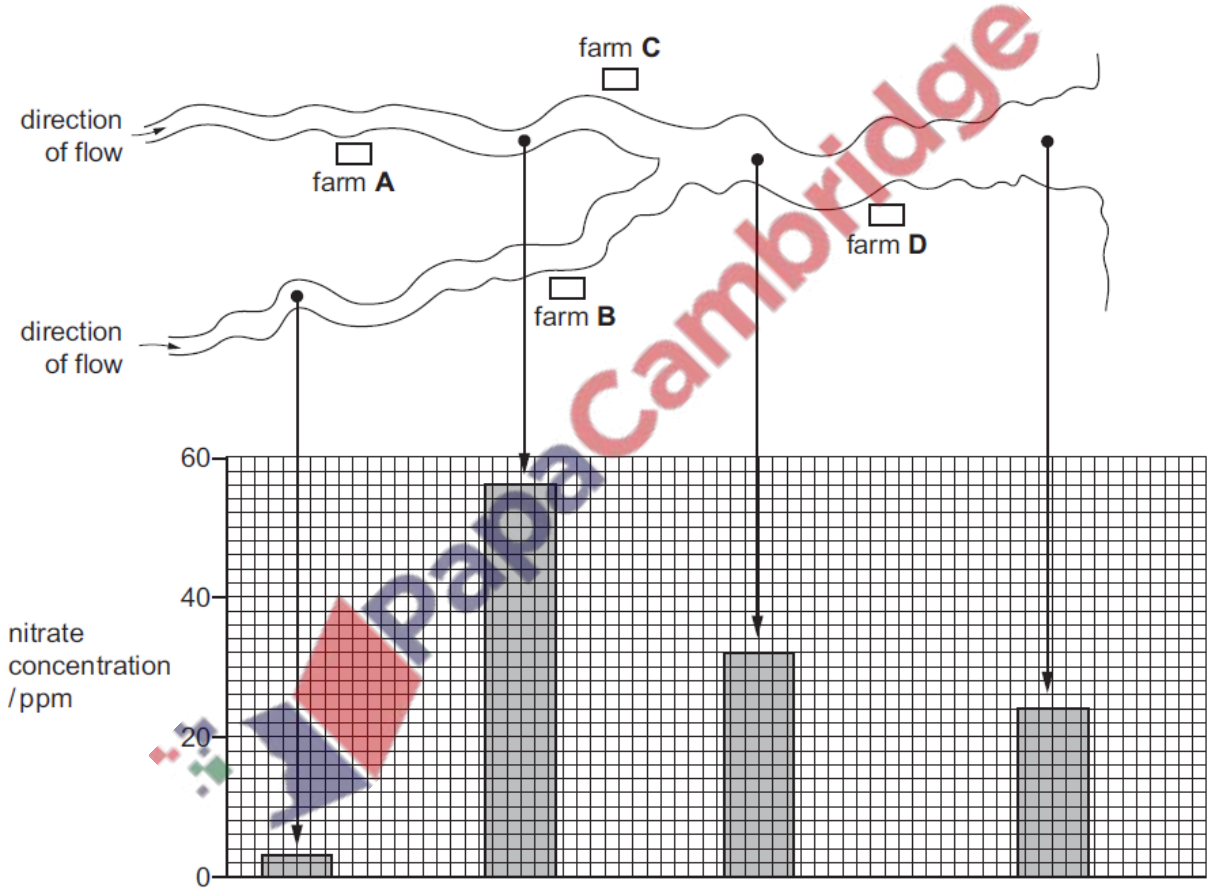
C a decrease in the level of carbon dioxide in the atmosphere

D a decreased risk of flooding

2. March/2020/Paper_12/No.40

The diagram shows the positions of four farms and the concentrations of nitrate at different points in a river.

Which farm is likely to have been using too much fertiliser on its land?



3. March/2020/Paper_32/No.8

(a) The box on the left contains the phrase 'intensive livestock farming'.

The boxes on the right contain some sentence endings.

Draw **two** lines from the box on the left to make **two** correct sentences.

	conditions increase the risk of the spread of disease.
	enables natural selection to take place.
Intensive livestock farming	
	involves keeping livestock in their natural environment.
	results in lots of animal waste which can pollute water.

[1]

(b) Intensive farming produces large volumes of greenhouse gases.

(i) State **two** greenhouses gases produced by intensive farming.

1 .....

2 .....

[2]

(ii) State **one** effect of the pollution caused by greenhouse gases.

..... [1]

[Total: 4]

4. March/2020/Paper_42/No.6

(a) Atlantic cod, *Gadhus morhua,* is a type of fish that is an important resource for commercial fishing.

Fig. 6.1 shows the estimated mass of Atlantic cod over 40 years.

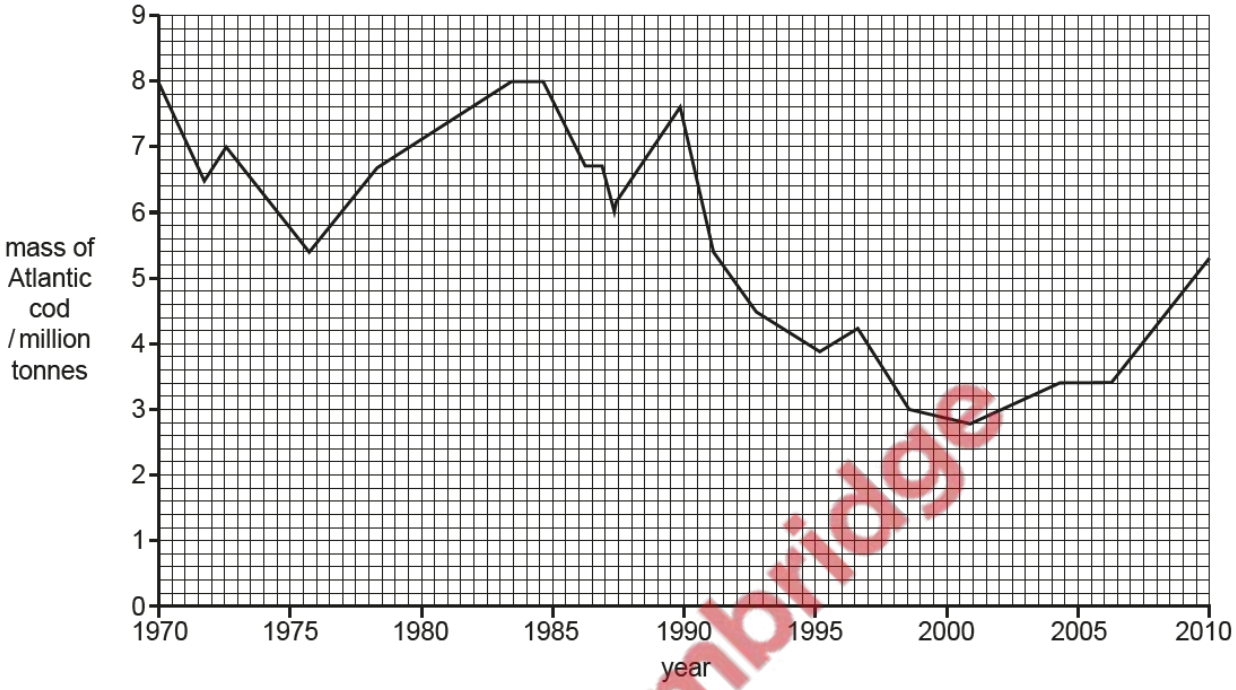


Fig. 6.1

(i) In 1970, the mass of Atlantic cod was 8 000 000 tonnes.

State **one** year when the mass of Atlantic cod was half this value.

..... [1]

(ii) State the years when there was a continuous increase in the mass of Atlantic cod for at least five years.

..... [1]

(iii) Suggest reasons for the trend shown between 1990 and 1995.

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..... [3]

(iv) Explain how fish stocks can be conserved by restocking.

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..... [3]

(b) Fish have adaptive features that enable them to live successfully in their environment.

Fig. 6.2 is a photograph of a great white shark, *Carcharodon carcharias*.

Great white sharks are efficient predators and have very good eyesight to see in poor light conditions underwater.

Fig. 6.2

(i) Describe **two** features, other than eyesight, visible in Fig. 6.2 that suggest that great white sharks are efficient predators.

1 .....

2 .....

[2]

(ii) Describe how the ancestors of the great white shark developed adaptive features such as good eyesight.

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..... [5]

[Total: 15]

5. June/2020/Paper_11/No.40

Wheat is often grown in large areas as a monoculture.

What is a negative environmental impact of this method of farming?

A The variety of species in the area is reduced.

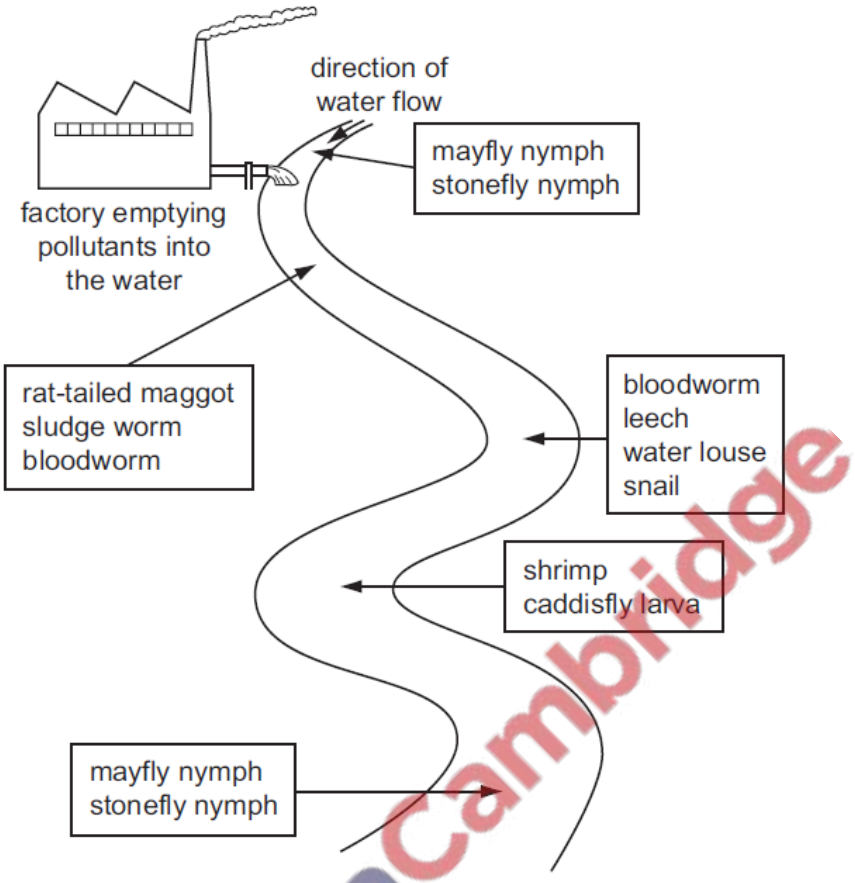
B Fewer types of pesticide are needed.

C Larger harvests can be produced.

D Specialist machinery can be used.

6. June/2020/Paper_12/No.39

The diagram shows the results of a survey on the types of animals found along a stretch of river near to a factory.



Which animal lives in the least polluted water?

A bloodworm

B caddisfly larva

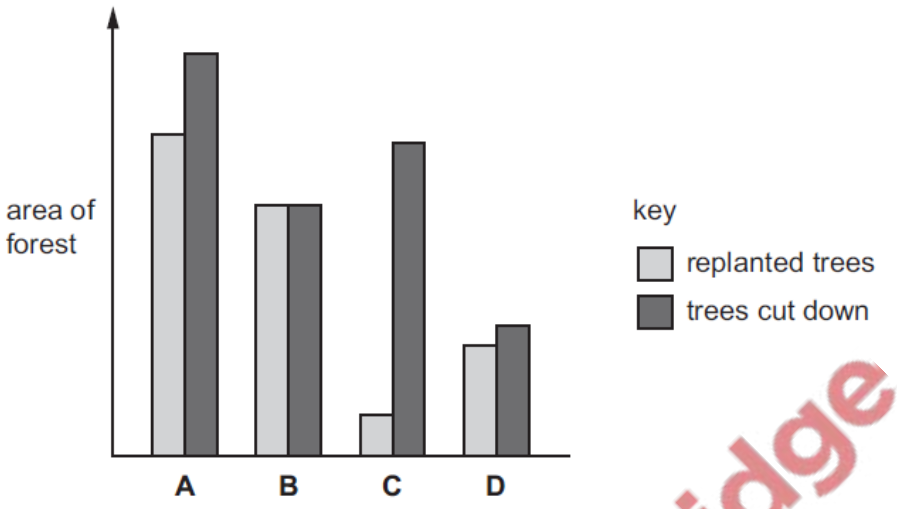
C leech

D stonefly nymph

7. June/2020/Paper_12/No.40

The graph shows four areas of forest that were cut down and then replanted with trees in one part of the world between 1995 and 2015.

Which area of forest was used most sustainably?



8. June/2020/Paper_13/No.38

A crop plant has been genetically modified to make it resistant to herbicides.

Which is a possible disadvantage of introducing this new crop plant?

A Loss of weeds reduces competition.

B Some weeds might become resistant to the herbicide.

C The crop plant is unharmed and produces a higher yield.

D The new gene will appear in new generations of the crop.

9. June/2020/Paper_13/No.39

Chickens are birds that are farmed to produce eggs for human consumption.

A type of chicken has been bred to lay **more** eggs.

Which method would be used to produce this type of chicken?

A asexual reproduction

B biotechnology

C natural selection

D selective breeding

10. June/2020/Paper_13/No.40

Sewage treatment involves a number of stages. Three of the stages are listed.

1 filter beds with anaerobic microbes to digest sewage

2 screens to trap large objects

3 settlement tanks to let insoluble particles sink

What is the correct order for treating sewage?

A $1 \rightarrow 2 \rightarrow 3$ **B** $2 \rightarrow 3 \rightarrow 1$ **C** $3 \rightarrow 2 \rightarrow 1$ **D** $3 \rightarrow 1 \rightarrow 2$

11. June/2020/Paper_21/No.40

When a river is polluted by fertiliser, the following processes may occur.

1 increased aerobic respiration of decomposers

2 increased growth of producers

3 decreased oxygen concentration in the water

What is the correct sequence for these processes?

A $1 \rightarrow 2 \rightarrow 3$ **B** $1 \rightarrow 3 \rightarrow 2$ **C** $2 \rightarrow 1 \rightarrow 3$ **D** $2 \rightarrow 3 \rightarrow 1$

12. June/2020/Paper_22/No.40

When a river is polluted by fertiliser, the following processes may occur.

1 increased aerobic respiration of decomposers

2 increased growth of producers

3 decreased oxygen concentration in the water

What is the correct sequence for these processes?

A $1 \rightarrow 2 \rightarrow 3$ **B** $1 \rightarrow 3 \rightarrow 2$ **C** $2 \rightarrow 1 \rightarrow 3$ **D** $2 \rightarrow 3 \rightarrow 1$

13. June/2020/Paper_23/No.36

What is defined as 'all of the populations of different species in an ecosystem'?

A community

B environment

C habitat

D trophic level

14. June/2020/Paper_23/No.39

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15. June/2020/Paper_23/No.40

When a river is polluted by fertiliser, the following processes may occur.

1 increased aerobic respiration of decomposers

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What is the correct sequence for these processes?

A $1 \rightarrow 2 \rightarrow 3$ **B** $1 \rightarrow 3 \rightarrow 2$ **C** $2 \rightarrow 1 \rightarrow 3$ **D** $2 \rightarrow 3 \rightarrow 1$

16. June/2020/Paper_31/No.7

(a) Fig. 7.1 shows a tropical forest where the trees have been cut down.

Fig. 7.1

(i) State the name of the type of habitat destruction shown in Fig. 7.1.

..... [1]

(ii) Describe **two** reasons why humans destroy habitats such as tropical forests.

1 .....

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2 .....

.....

[2]

(b) Fig. 7.2 is a graph showing the estimated area of trees that have been removed from tropical forests between 2001 and 2017.

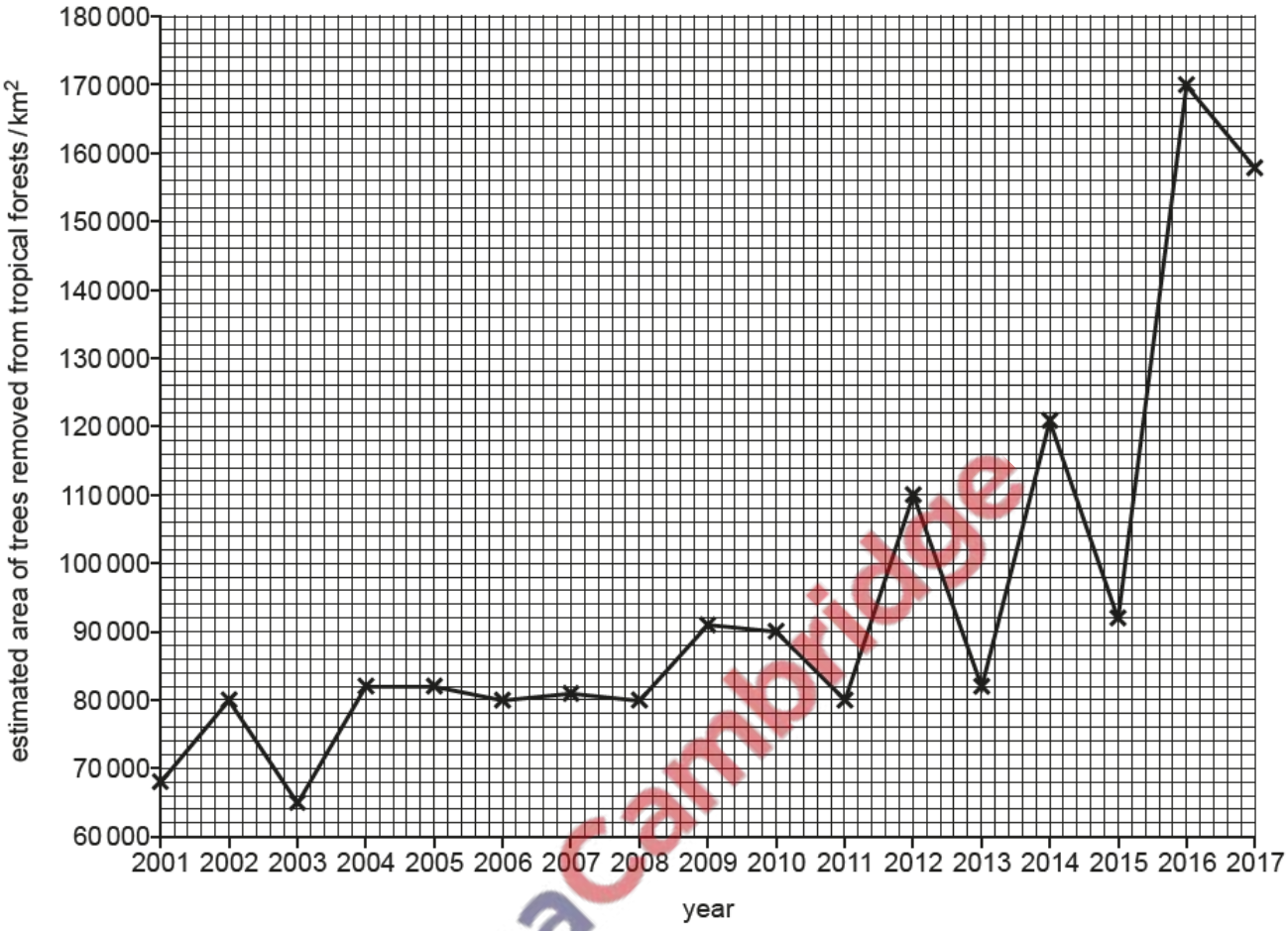

Fig. 7.2

(i) State the year which had the lowest estimated area of trees removed from tropical forests on Fig. 7.2.

..... [1]

(ii) State the area of trees removed in 2012 on Fig. 7.2.

..... km^2 [1]

(iii) A student made three statements about the data in Fig. 7.2:

1 The number of trees cut down increases every year.

2 The number of trees cut down in 2014 was three times more than the number of trees cut down in 2003.

3 Fewer trees were cut down in 2017 than in 2016.

Complete Table 7.1 by using the data in Fig. 7.2 to decide if each statement is true or false and state the evidence that supports your decision.

Table 7.1

statement number	true or false	evidence from Fig. 7.2
1	.....	....
2	.....	....
3	.....	....

[3]

(c) Fig. 7.3 shows pollution in a marine environment and Fig. 7.4 shows pollution in a land environment.

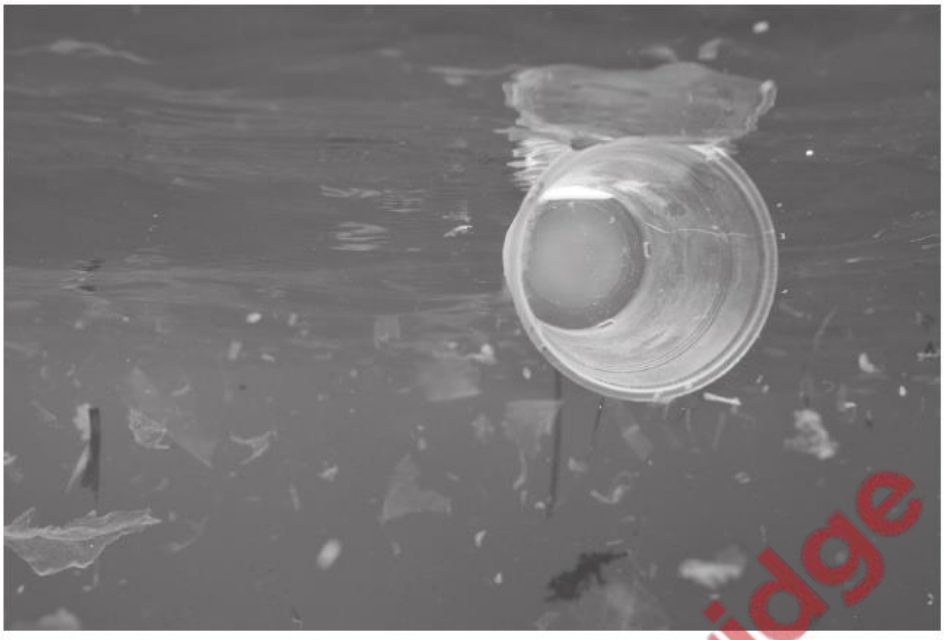

Fig. 7.3

Fig. 7.4

State the name of **one** source of pollution for each of the environments shown in Fig. 7.3 and Fig. 7.4.

marine .....

land .....

[2]

[Total: 10]

17. June/2020/Paper_32/No.4

Fig. 4.1 shows some of the processes involved in the treatment of sewage.

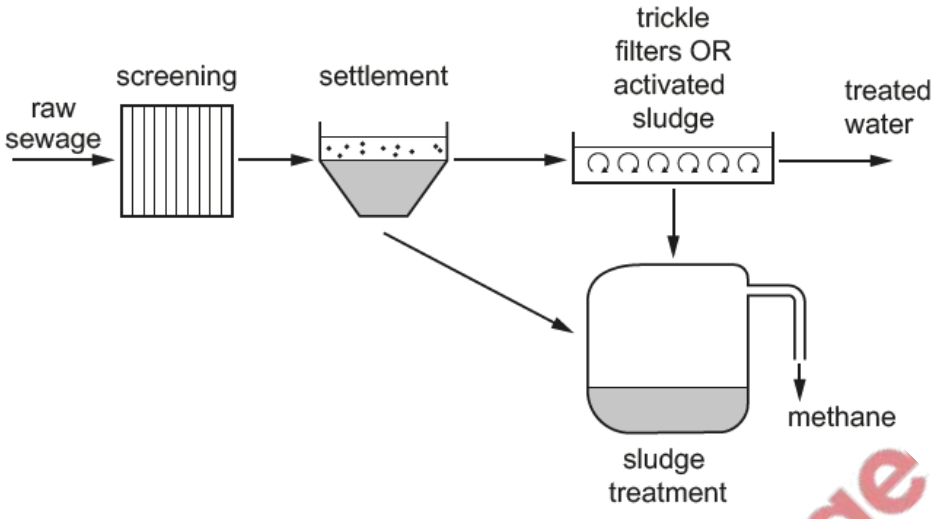

Fig. 4.1

(a) Complete Table 4.1 by placing ticks (✓) in the correct boxes to show what is involved in each process during the treatment of sewage.

The first row has been completed for you.

Table 4.1

process	process involves:			
	aeration	removal of large solids	separating liquid waste from solid waste	the use of microorganisms
production of methane				✓
screening				
settlement				
sludge treatment				
trickle filters OR activated sludge				

[4]

(b) Describe **two** reasons why it is necessary to treat sewage before returning the water to the environment.

1 .....

.....

2 .....

.....

[2]

[Total: 6]

18. June/2020/Paper_32/No.7

Researchers investigated the effects of using a fertiliser on the number of leaves grown by plants.

The fertiliser contained nitrate and magnesium ions.

Plants in group 1 were grown in soil with fertiliser.

Plants in group 2 were grown in soil without fertiliser.

The results are shown in Fig. 7.1.

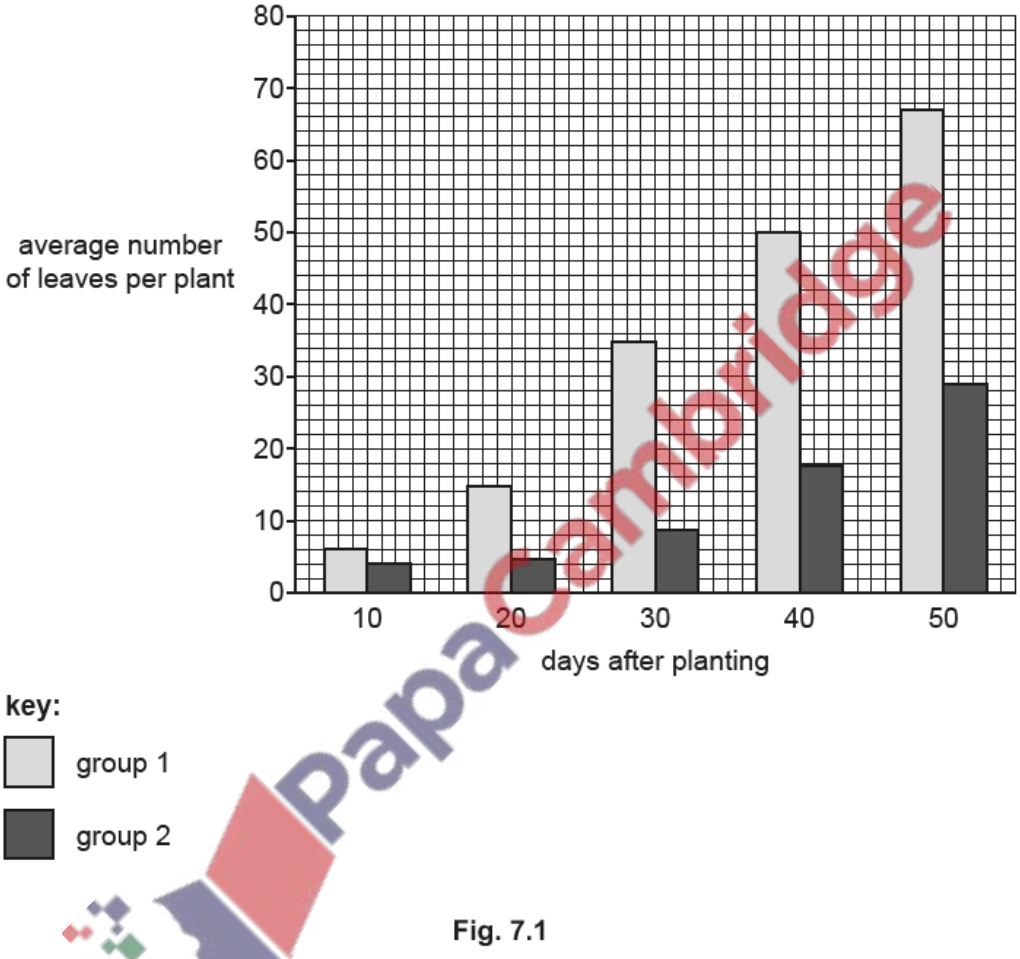

Fig. 7.1

(a) Describe the results shown in Fig. 7.1.

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..... [3]

(b) A student wrote a series of statements to explain why an increase in nitrate and magnesium ions increased the number of leaves. Not all of the statements are correct.

A – Magnesium is required for the synthesis of chlorophyll.

B – Nitrate ions are a component of carbohydrates.

C – Chlorophyll is required for photosynthesis.

D – Proteins are needed for growth.

E – Plants make their own food by the process of respiration.

F – Respiration produces glucose.

State the letters of the correct statements.

..... [3]

(c) State the principal source of energy for plants.

..... [1]

[Total: 7]

19. June/2020/Paper_32/No.8

(a) Table 8.1 shows the mass of different materials recycled in one country in 2012 and 2017.

Table 8.1

year	material recycled / tonnes			
	cardboard	paper	metal	plastic
2012	193091	222455	41488	44262
2017	245345	144416	24874	23498

(i) Describe the data in Table 8.1.

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..... [3]

(ii) Calculate the percentage change in mass of plastic recycled between 2012 and 2017.

..... %
[2]

(b) Discarded rubbish is one source of pollution.

Adding excess fertiliser to soil is another source of pollution.

(i) State **two** other types of substances used in agriculture that can pollute land and water.

1 .....

2 .....
[2]

(ii) State the names of **two** gases that pollute air and are linked to climate change.

1 .....

2 .....

[2]

[Total: 9]

20. June/2020/Paper_42/No.4

Some crop farmers use herbicides on their fields.

Fig. 4.1 shows a farmer spraying a rice crop with herbicides.

Fig. 4.1

(a) Herbicides kill weeds.

Explain why farmers use herbicides.

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..... [2]

(b) Fields of crop plants were sprayed with two herbicides. A farmer measured the concentration of the two herbicides, **A** and **B**, in a lake near the fields.

The water in the lake was sampled at intervals for two weeks.

Fig. 4.2 shows the results.

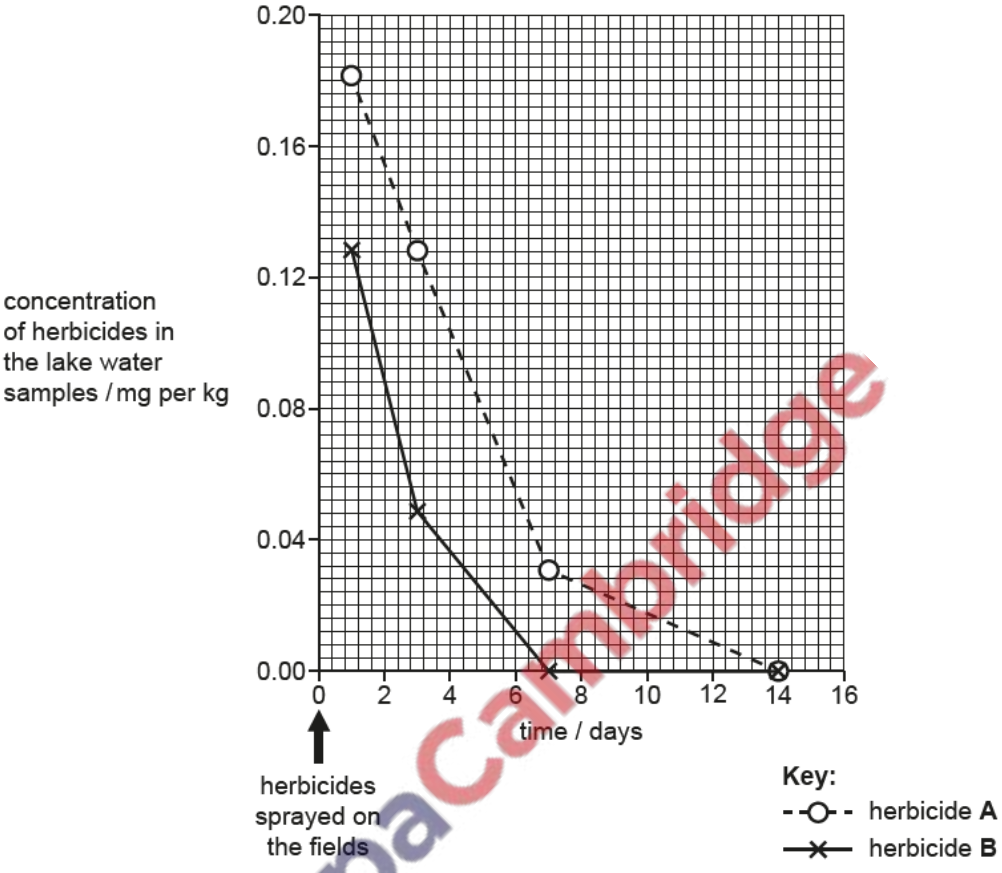

Fig. 4.2

(i) Compare the concentrations of herbicide **A** and herbicide **B** in the lake.

Use the information in Fig. 4.2 to support your answer.

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..... [3]

(ii) Suggest how herbicides damage ecosystems in a lake.

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..... [4]

(c) Herbicide **A** is a synthetic plant hormone called 2,4-D that selectively kills dicotyledonous plants only.

(i) State **two** features that distinguish leaves of dicotyledonous plants from leaves of monocotyledonous plants.

1 .....

2 .....

[2]

(ii) State the name of a natural plant hormone that stimulates cell elongation.

..... [1]

(iii) Herbicide **B** is a chemical that prevents the uptake of magnesium ions.

Suggest how herbicide **B** kills plants.

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..... [3]

[Total: 15]

21. June/2020/Paper_43/No.4

Xerophytes grow in habitats with low rainfall and soils that often have high concentrations of salts.

Fig. 4.1 shows the xerophyte *Yucca treculeana* growing on salt flats.

Fig. 4.1

(a) **(i)** Explain how xerophytes, such as *Y. treculeana*, are adapted to absorb sufficient water in the conditions in which they live.

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..... [4]

(ii) Explain how xerophytes are adapted to reduce water loss to the atmosphere.

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.....

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.....

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..... [3]

(iii) Xerophytes often have many defence mechanisms that reduce or prevent herbivores eating them.

Suggest how xerophytes protect themselves against herbivores.

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.....

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..... [2]

(b) Forest ecosystems can be affected by acid rain.

Describe how the production of acid rain **and** its effects on forest ecosystems can be reduced.

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..... [4]

[Total: 13]