Human influences on ecosystems – 2022 June IGCSE 0610

1. June/2022/Paper_ 21/No.39

What is a reason for conserving plant species?

A to absorb oxygen from the air

B to decrease rainfall

C to obtain drugs for medicinal use

D to release carbon dioxide into the air

2. June/2022/Paper_ 32/No.4(b_ c)

(b) Conservationists counted the number of organisms in each feeding level for one of the food chains in a rainforest.

The data were used to draw a pyramid of numbers. Table 4.1 shows the data.

Table 4.1

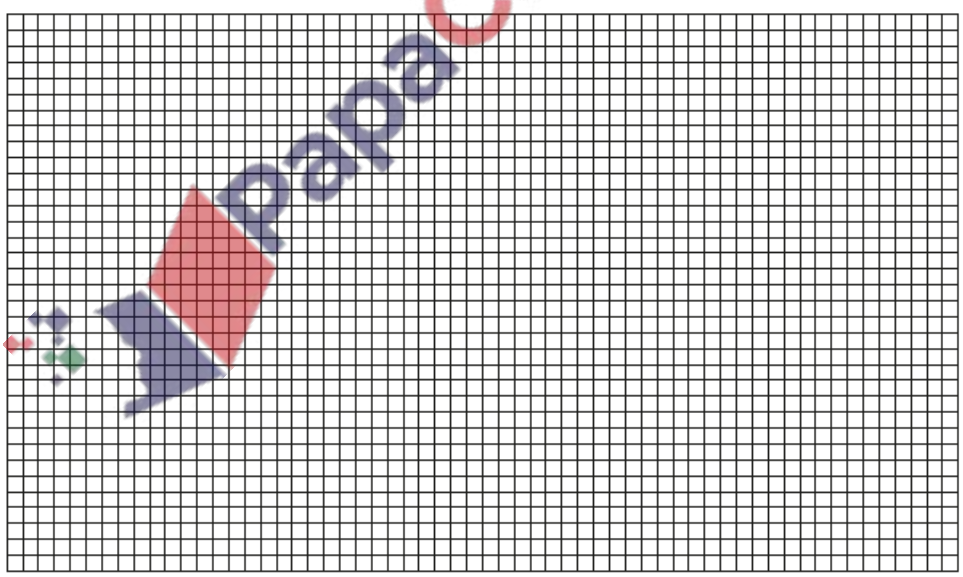
feeding level	number of organisms	width of the bar in the pyramid of numbers / cm
producer	4	0.4
primary consumer	100	10.0
secondary consumer	26	
tertiary consumer	8	0.8

(i) Complete Table 4.1 by calculating the width of the bar for the secondary consumer feeding level.

..... cm [1]

(ii) Using the information in Table 4.1 and your answer to **4(b)(i)**, draw a pyramid of numbers on the grid. Each small square on the grid is 0.2 cm wide.

Label each bar with the feeding level.



[4]

(c) Deforestation is a cause of habitat loss for many organisms.

List **three** other undesirable effects of deforestation.

1 .....

2 .....

3 .....

[3]

3. June/2022/Paper_ 33/No.4(a_ c)

Sewage treatment reduces water pollution.

(a) **(i)** State the names of **two** of the stages of sewage treatment.

1 .....

2 .....

[2]

(ii) Raw sewage is a major source of water pollution.

State the name of **one other** source of water pollution.

..... [1]

(b) Urea is found in sewage. Urea is made in the human body and excreted in urine.

(i) State the name of the biological molecules that are broken down to make urea.

..... [1]

(ii) State the name of the organ that produces urea.

..... [1]

(c) Raw sewage can be produced by intensive livestock farming.

State **two other** negative impacts of intensive livestock farming.

1 .....

.....

2 .....

.....

[2]

4. June/2022/Paper_ 41/No.4(a_ b)

Researchers investigated the effect of adding cattle manure (cattle faeces) to fields where snap bean plants, *Phaseolus vulgaris*, were grown. Cattle manure contains some protein.

(a) Explain how protein in the cattle manure is converted to the type of ions that plants can absorb.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

..... [5]

(b) Snap bean plants are legumes which have root nodules that contain nitrogen-fixing bacteria.

Fig. 4.1 shows some root nodules.

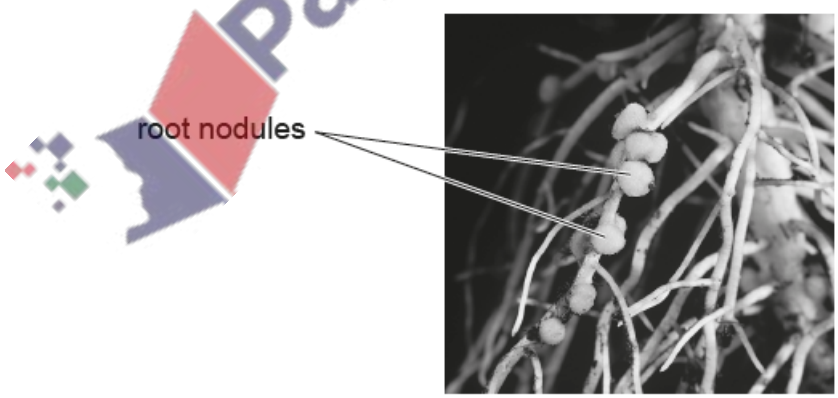


Fig. 4.1

(i) Suggest the advantage to farmers of having snap bean plants that have a large number of root nodules.

.....

.....

..... [1]

(ii) The researchers investigated the effect of adding cattle manure to fields of snap bean plants.

- Field 1 was treated with a small quantity of cattle manure.
- Field 2 was treated with a medium quantity of cattle manure.
- Field 3 was treated with a large quantity of cattle manure.
- Field 4 was not treated with any cattle manure.

The researchers counted the number of root nodules on samples of plants from each field when the snap beans were harvested.

The results of the investigation are shown in Fig. 4.2.

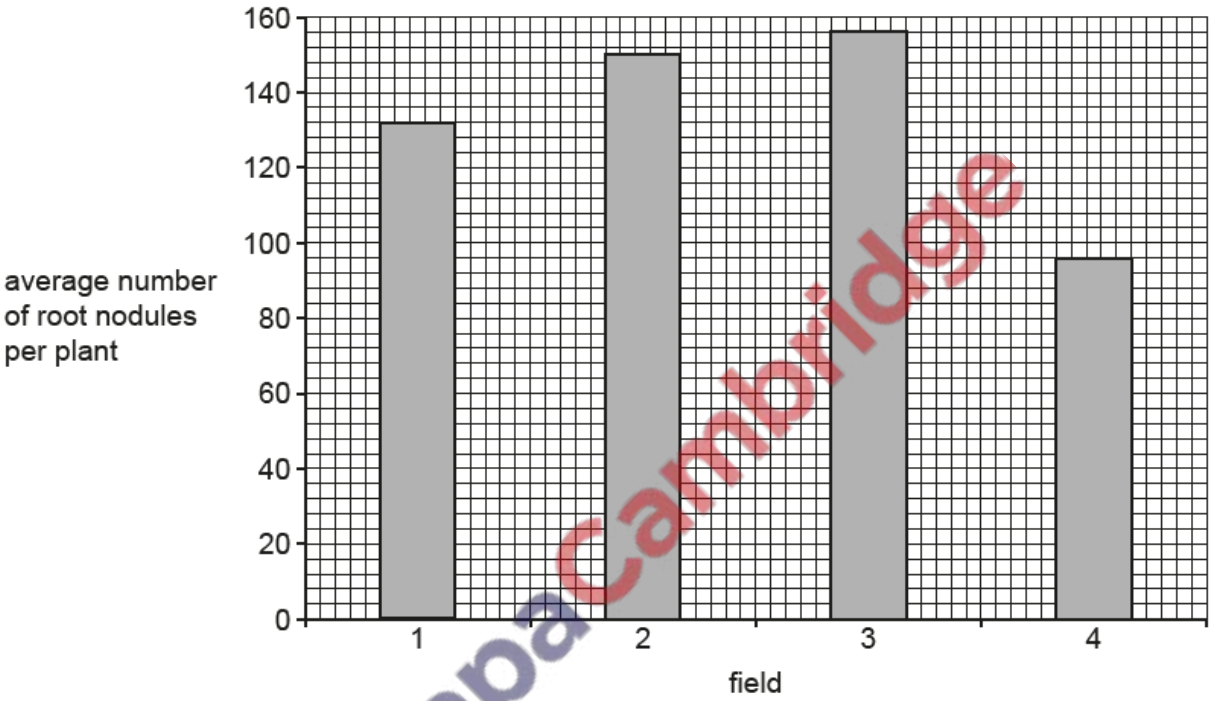


Fig. 4.2

Calculate the percentage increase in the average number of root nodules per plant when snap bean plants were grown with a large quantity of cattle manure (field 3) compared with no cattle manure (field 4).

Give your answer to **two** significant figures.

Space for working.

.....%
[3]

(iii) When large quantities of manure are put on fields it can lead to eutrophication of streams and rivers. This can lead to the death of fish.

Describe how eutrophication of streams and rivers can lead to the death of fish.

.....

.....

.....

.....

.....

.....

.....

.....

..... [4]

5. June/2022/Paper_ 41/No.5(b_ d)

(b) Explain the undesirable effects of deforestation on habitats that are on mountains, such as Mount Mulanje.

.....

.....

.....

.....

.....

.....

..... [3]

(c) Scientists in Malawi are working to prevent the extinction of the Mulanje cedar tree in its natural habitat.

Explain the benefits to other organisms on Mount Mulanje of conserving the Mulanje cedar tree in its natural habitat.

.....

.....

.....

.....

..... [2]

(d) The seeds of many endangered tree species are kept in seed banks.

Suggest why it is important to collect seeds from many individual trees of each species rather than just one tree.

.....

.....

.....

.....

..... [2]

6. June/2022/Paper_ 43/No.3(a_ d)

Acid rain has destroyed many forests including the forest shown in Fig. 3.1.

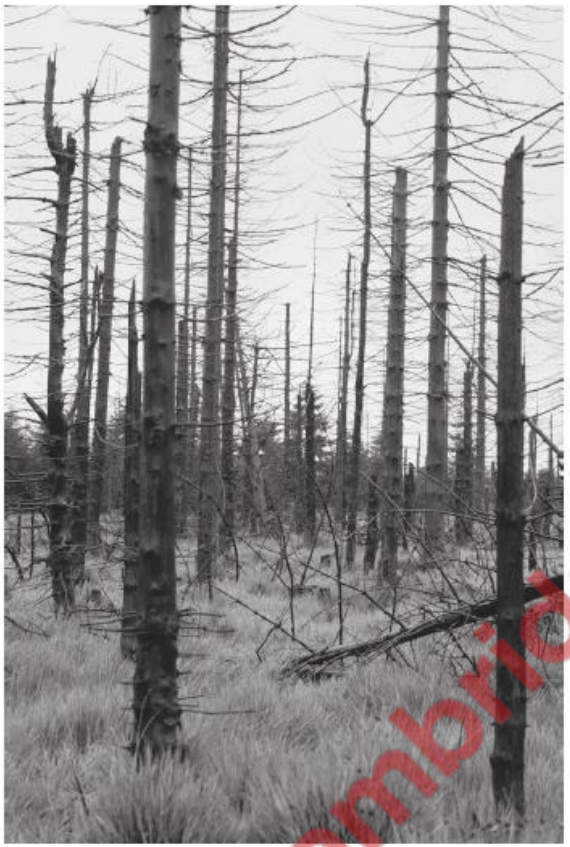


Fig. 3.1

(a) Describe how acid rain destroys forests.

.....

.....

.....

.....

.....

.....

..... [3]

(b) Explain the negative consequences to the environment of destroying forests.

.....

.....

.....

.....

.....

.....

.....

.....

..... [4]

(c) Acid rain can also damage aquatic organisms such as the amphibian shown in Fig. 3.2.

Fig. 3.2

Suggest why amphibians are vulnerable to pollutants such as acid rain.

.....

.....

.....

.....

..... [2]

(d) Many countries have strict laws to prevent acid rain.

Describe how countries have reduced acid rain.

.....

.....

.....

.....

.....

.....

..... [3]