20. Human influences on ecosystems

20.2 Habitat destruction

Paper 3 and 4

Question Paper

Paper 3

Questions are applicable for both core and extended candidates

1 **(a)** Cabbages are crop plants.

Fig. 6.1 shows an area where the forest has been removed to create space for a monoculture of cabbage plants.

Fig. 6.1

(i) Describe reasons for habitat destruction, **other than** crop production.

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....

.... [3]

(ii) Describe the **advantages** of growing crops such as cabbages as a large-scale monoculture.

....

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.... [3]

(b) Habitat destruction can cause species extinction.

State **two** ways that species can be conserved, **other than** protection of their habitat.

1 ....

2 ....
[2]

(c) Four islands, **A**, **B**, **C** and **D**, were surveyed to identify the different types of crop plant monocultures present.

The survey identifies the percentage of each type of monoculture on each island.
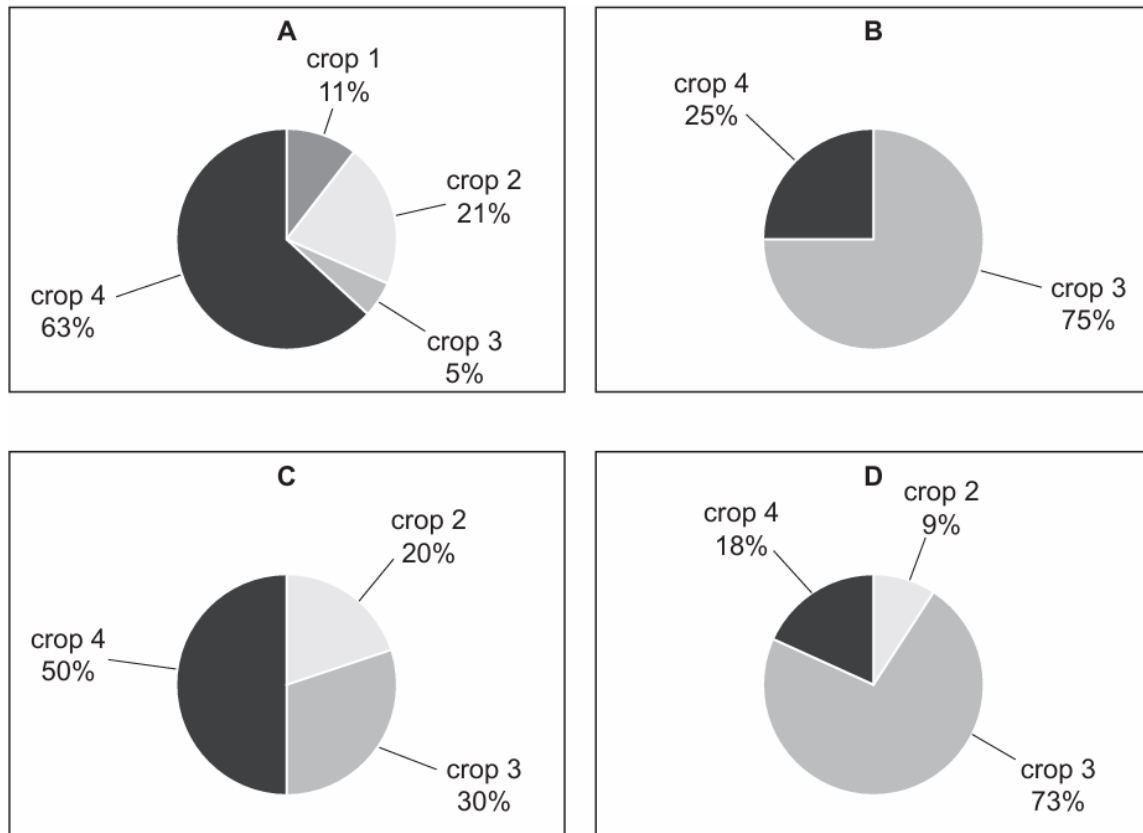
Fig. 6.2 shows the results of the survey.

A
crop 1 11%
crop 2 21%
crop 4 63%
crop 3 5%

B
crop 4 25%
crop 3 75%

C
crop 2 20%
crop 4 50%
crop 3 30%

D
crop 4 18%
crop 2 9%
crop 3 73%

Fig. 6.2

Identify the island or islands from Fig. 6.2 that:

have the greatest number of different types of monocultures ....

have the greatest percentage of crop 2 monocultures ....

have more than 50% crop 3 monocultures. .... and ....

[3]

(d) One effect of deforestation and monocultures is a reduction in biodiversity.

State what is meant by the term biodiversity.

....

....

.... [2]

(e) Crop 3 is a type of tree that can be used for firewood.

Suggest how this resource can be managed sustainably.

....

....

.... [1]

[Total: 14]

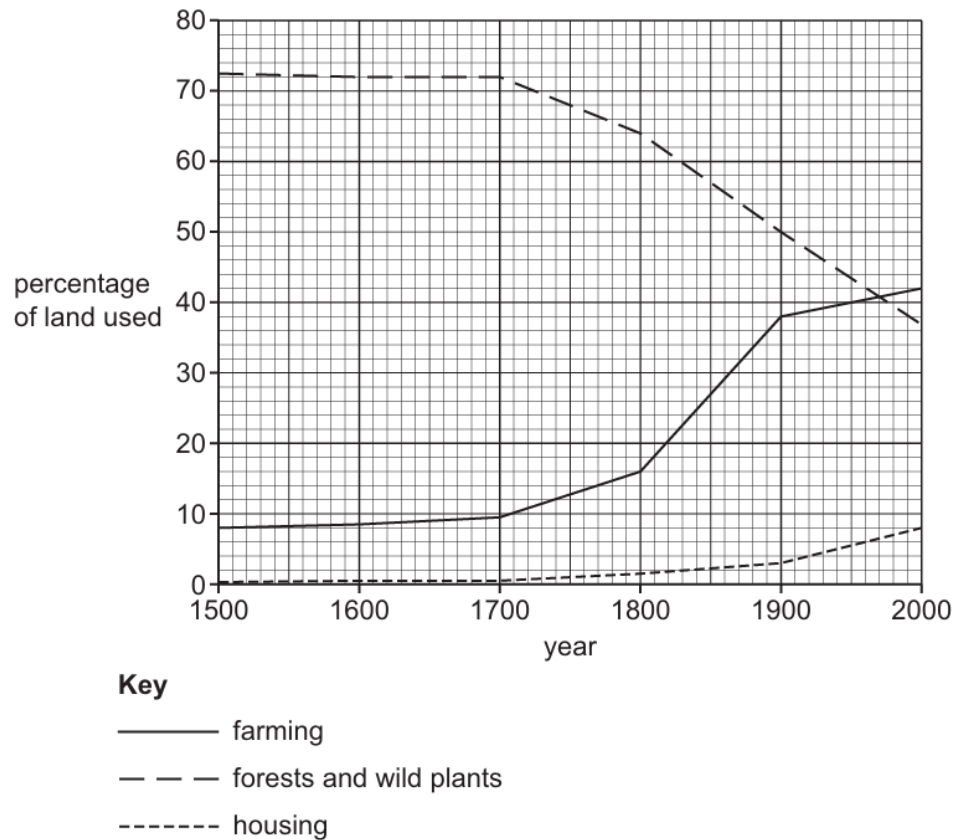2   Fig. 7.1 shows how some uses of land have changed from the year 1500 to the year 2000 in one country.

Fig. 7.1

(a) Using the data in Fig. 7.1:

   (i) Identify the years when there was the largest increase in the percentage of land used for farming.

   from .... to .... [1]

   (ii) State the trend for the percentage of land used for housing.

   ....

   ....

   .... [1]

   (iii) State the year when the percentage of land used for forests and wild plants was equal to the percentage of land used for farming.

   .... [1]

(b) Deforestation is one of the consequences of using land for farming.

Outline the undesirable effects of deforestation.

....

....

....

....

....

....

.... [3]

(c) State **one** way humans can damage **aquatic** environments.

.... [1]

[Total: 7]

3   **(c)** Explain the effect of deforestation on the concentration of carbon dioxide in the atmosphere.

....

....

....

....

.... [2]

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

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

1 ....

2 ....

3 ....

[3]

5 **(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 ....

....

2 ....

....
[2]

6   Sewage contains water and other substances.

Sewage should be treated before it goes into a river.

(a) Describe **two** reasons why sewage should be treated before it goes into a river.

1 ....

....

2 ....

....
                                                                                                                    [2]

(b) Treatment of sewage has several stages.

One of the stages is filtration.

State the name of **one** other stage in the treatment of sewage.

.... [1]

(c) Fig. 9.1 shows a trickling filter in a sewage treatment plant.

gravel

Fig. 9.1

The untreated sewage trickles through gravel. There are organisms on the surface of the gravel.

(i) State the name of the type of organism on the surface of the gravel.

.... [1]

(ii) Describe the function of these organisms.

....

....

.... [1]

7 **(c)** Deforestation can cause an increase in the concentration of carbon dioxide in the atmosphere.

(i) State **two** other undesirable effects of deforestation.

1 ....

2 ....
[2]

(ii) State **two** uses for land that has been cleared of trees.

1 ....

2 ....
[2]

(d) The forests in Brazil contain many endangered species.

Table 5.1 shows the area of forest that was removed in Brazil each year between 2006–2010.

Table 5.1

year	area of forest removed/km^2
2006	14286
2007	12651
2008	11911
2009	7464
2010	7000

(i) Calculate the average area of forest removed per year from 2006 to 2010.

Show your working.

....km^2

[2]

(ii) Describe the trend in the data shown in Table 5.1.

....

....

....[1]

(iii) Suggest **two** reasons for the trend you have described in part **(ii)**.

1 ....

2 ....

[2]

Paper 4

Questions are applicable for both core and extended candidates

8 **(b)** Data scientists used satellite images to analyse the occurrence of fires globally, during a 14-year period. They tracked all fires that were larger than $0.21\,km^2$ and therefore visible from space.

Table 5.1 summarises some of their data, categorising the fires by location. The locations include natural ecosystems and land that is managed by people. The expansion rate is the speed at which each fire becomes larger.

Table 5.1

location of fire	estimated total number of fires	estimated average expansion rate of fires /km^2 per day	estimated average duration of fires /days
natural boreal forest	197 124	0.6	5.4
natural temperate forest	178 909	0.4	4.1
natural savannah (grassland with few trees)	9 809 719	0.7	4.6
managed land being deforested	909 826	0.3	3.8
managed agricultural land	1 631 918	0.3	3.4

(i) Using the information in Table 5.1, compare the data for the two managed locations with the data for the three natural locations.

....

....

....

....

....

....

.... [3]

(ii) Describe how the data in Table 5.1 could be used to estimate the total area that was burnt during the 14-year period, for each location.

....

....

....

....

.... [2]

(iii) Burning large areas of forest is a cause of habitat destruction.

Describe the possible consequences of habitat destruction.

....

....

....

....

....

....

.... [3]

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

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....

.... [3]

10 **(c)** One threat to aquatic ecosystems, such as coral reefs, is global climate change.

Discuss the threats to aquatic ecosystems, **other** than climate change.

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....

....

.... [3]