Human influences on ecosystems – 2022 November IGCSE 0610 Biology

1. Nov/2022/Paper_11/No.39

Biological washing powders can remove stains from clothes.

What must a washing powder contain, to remove an oil stain from a t-shirt?

A amylase

B lipase

C pectinase

D protease

2. Nov/2022/Paper_12/No.40

What could be undesirable effects of deforestation?

1 extinction of species

2 increased flooding

3 reduction of atmospheric carbon dioxide

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

3. Nov/2022/Paper_13/No.40

What are undesirable effects of deforestation?

A a decrease in soil erosion and a decrease in carbon dioxide in the atmosphere

B a decrease in soil erosion but an increase in carbon dioxide in the atmosphere

C an increase in soil erosion but a decrease in carbon dioxide in the atmosphere

D an increase in soil erosion and an increase in carbon dioxide in the atmosphere

4. Nov/2022/Paper_21/No.39

Which statement about sustainable resources is correct?

A They include fossil fuels.

B They include non-renewable resources.

C Their production rate is equal to their removal rate.

D Their production rate is smaller than their removal rate.

5. Nov/2022/Paper_21/No.40

What is the **least** sustainable method of helping to maintain a population of fish in a lake?

A Only allow female fish to be caught and eaten.

B Only allow fishing at certain times of the year.

C Only allow fishing in certain areas of the lake.

D Only allow the largest fish to be caught and eaten.

6. Nov/2022/Paper_22/No.38

The list shows some of the steps in the production of human insulin by genetic engineering.

1 The human insulin gene is inserted into a bacterial plasmid using DNA ligase.

2 A recombinant plasmid is inserted into a bacterium.

3 The bacterium containing the recombinant plasmid replicates.

4 The insulin gene is removed from human DNA using a restriction enzyme.

What is the correct sequence of these steps?

A 1 → 2 → 4 → 3

B 2 → 4 → 3 → 1

C 3 → 2 → 1 → 4

D 4 → 1 → 2 → 3

7. Nov/2022/Paper_22/No.39

Deforestation results in an increase in the concentration of carbon dioxide in the atmosphere.

What is the correct explanation?

A There is less decay.

B There is less photosynthesis.

C There is less respiration.

D There is less transpiration.

8. Nov/2022/Paper_22/No.40

Which definition of sustainable development is correct?

A providing for the needs of an increasing human population without harming the environment

B using a resource more quickly than it can be replaced

C using increasing areas of land for crops, livestock production and housing

D conservation of endangered species by captive breeding programmes and seed banks

9. Nov/2022/Paper_23/No.40

What is a consequence of deforestation?

A flooding due to reduced transpiration by trees

B increased carbon dioxide concentration in the atmosphere due to increased photosynthesis

C reduced carbon dioxide concentration in the atmosphere due to increased decomposition of dead trees

D reduced oxygen concentration in the atmosphere due to reduced respiration of trees

(c) Biofuels can be made from ethanol which is a type of alcohol.

Ethanol is produced during anaerobic respiration in yeast.

The volume of biofuels produced by seven countries was measured.

Fig. 6.1 shows the percentage of biofuels produced by each country.

The countries are labelled **A** to **G**.

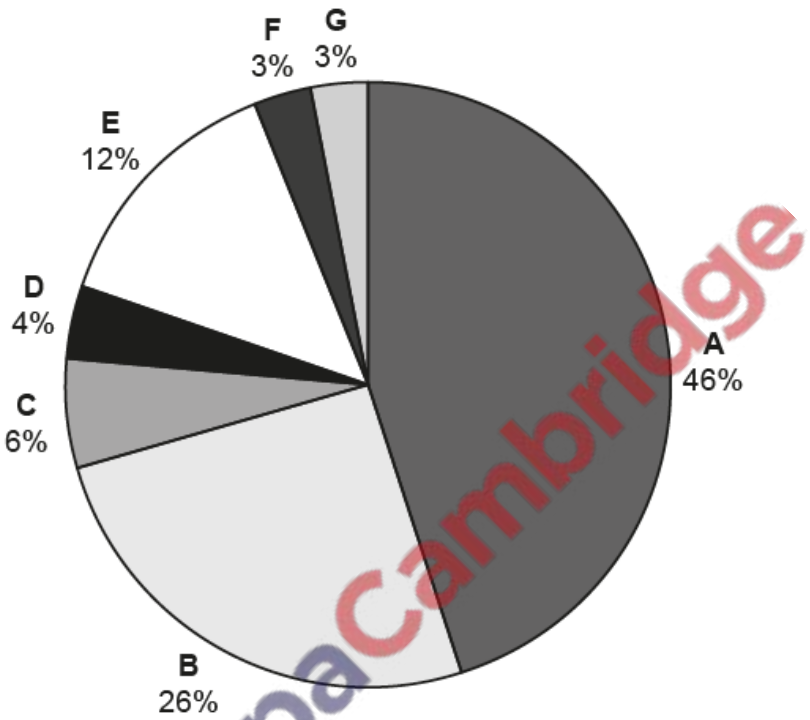

Fig. 6.1

(i) Complete the sentences to describe the results shown in Fig. 6.1.

Country ..... produces the largest percentage of biofuels.

Countries ..... and ..... produce the smallest percentages of biofuels.

Country **E** produces twice as much biofuel as country ..... .

[4]

(ii) State the name of **one** product of anaerobic respiration in yeast, other than alcohol.

..... [1]

(iii) State **one** use by humans of anaerobic respiration in yeast, other than to produce biofuels.

..... [1]

11. Nov/2022/Paper_33/No.4

(a) Fig. 4.1 shows a small pond.

Fig. 4.1

A student investigated a pond ecosystem and found that:

- Frogs eat pond snails.
- The pond contains aquatic plants.
- Pond snails eat aquatic plants.

Construct a food chain for these organisms. Do **not** draw the organisms.

.....

[2]

(b) The student then investigated a seashore ecosystem.

The food web for this seashore is shown in Fig. 4.2.

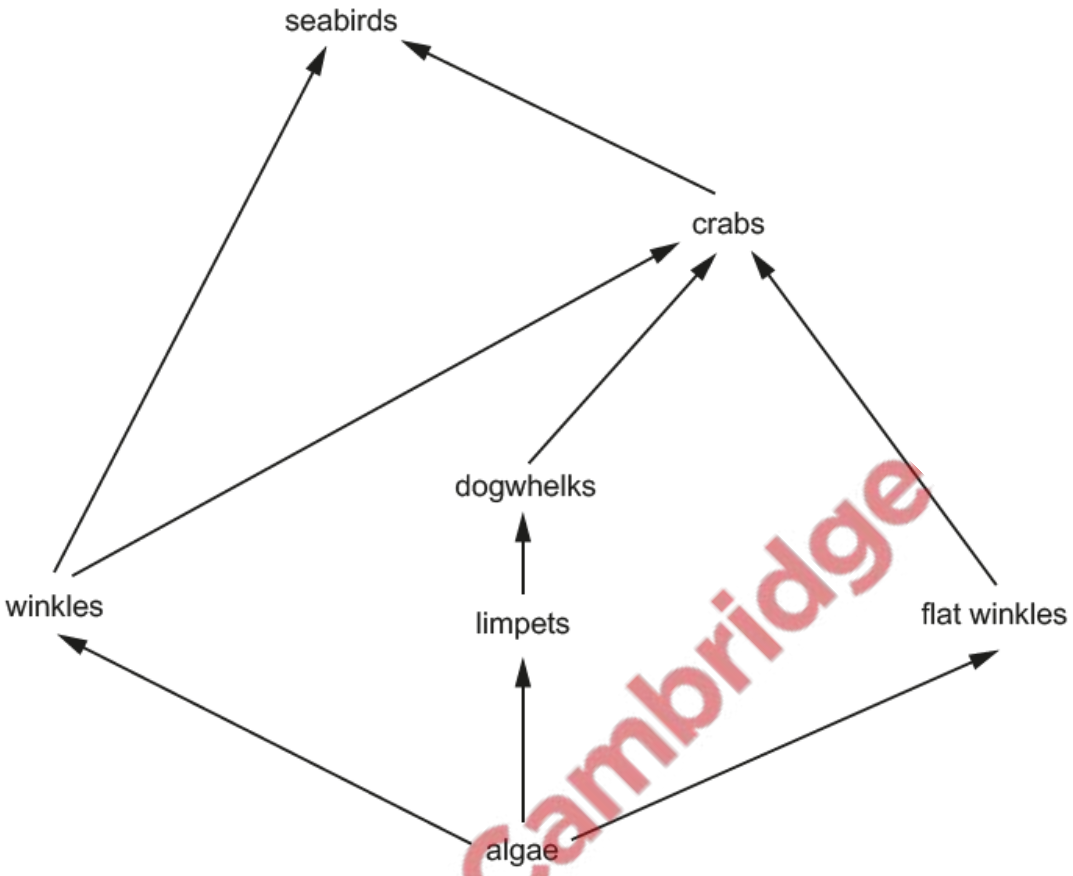

Fig. 4.2

(i) Complete Table 4.1 by counting the number of each type of organism in the food web.

Table 4.1

description	number of each type of organism in the food web
carnivore	
consumer	
herbivore	
producer	

[4]

(ii) A new species of starfish was introduced to the seashore food web in Fig. 4.2.

The starfish species eats limpets.

Predict what would happen to the number of dogwhelks and algae in this area after the starfish were introduced.

dogwhelks .....

.....

algae .....

.....

[2]

(c) Some bacteria that live on the seashore feed on dead material.

State the term used to describe organisms that get energy from dead or waste organic material.

..... [1]

[Total: 9]

12. Nov/2022/Paper_41/No.5

Fires release carbon dioxide into the atmosphere.

(a) **(i)** State **one** other natural process that releases carbon dioxide into the atmosphere.

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..... [1]

(ii) Carbon dioxide is a greenhouse gas.

State the name of **one** other greenhouse gas.

..... [1]

(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.

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..... [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.

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..... [2]

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

Describe the possible consequences of habitat destruction.

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..... [3]

[Total: 10]

(a) Fig. 4.1 shows a dandelion plant, *Taraxacum officinale*, in a field. The flower stalk is called a scape.

Fig. 4.1

(i) The scape of a dandelion responds to sunlight by growing upwards.

State the name of this growth response.

..... [1]

(ii) The scapes of dandelions keep the plant upright without the need for structures such as bones.

Explain how cells in plant scapes and stems keep plants upright.

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..... [2]

(b) Fig. 4.2 is part of a cross-section through the scape of a dandelion.

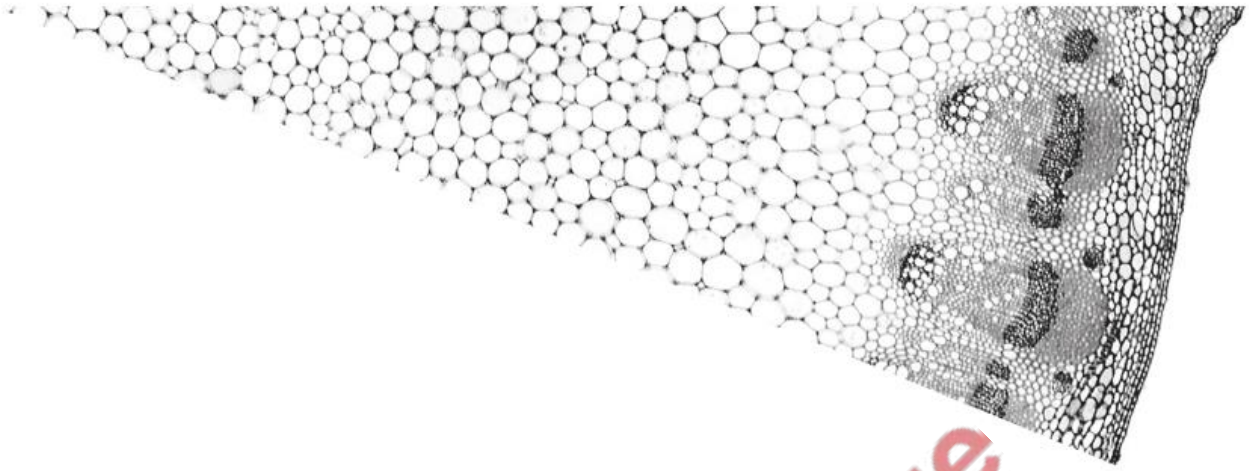

Fig. 4.2

Draw a line and add a label **on Fig. 4.2** to identify one area of **xylem** tissue. [1]

(c) Describe the function of **phloem** tissue.

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..... [3]

(d) A dandelion scape was cut into long strips for an osmosis investigation.

Immediately after the scape was cut, the pieces of scape bent outwards, as shown in Fig. 4.3.

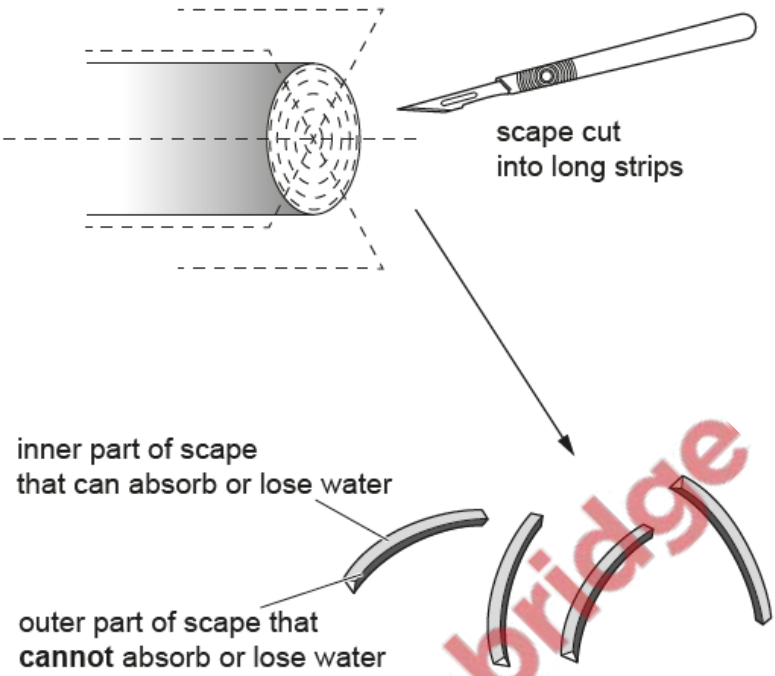

Fig. 4.3

Strips of dandelion scape were placed in four dishes, **A**, **B**, **C** and **D**, for 30 minutes.

Each dish contained a different concentration of salt solution.

Fig. 4.4 shows the appearance of the four strips of scape after 30 minutes.

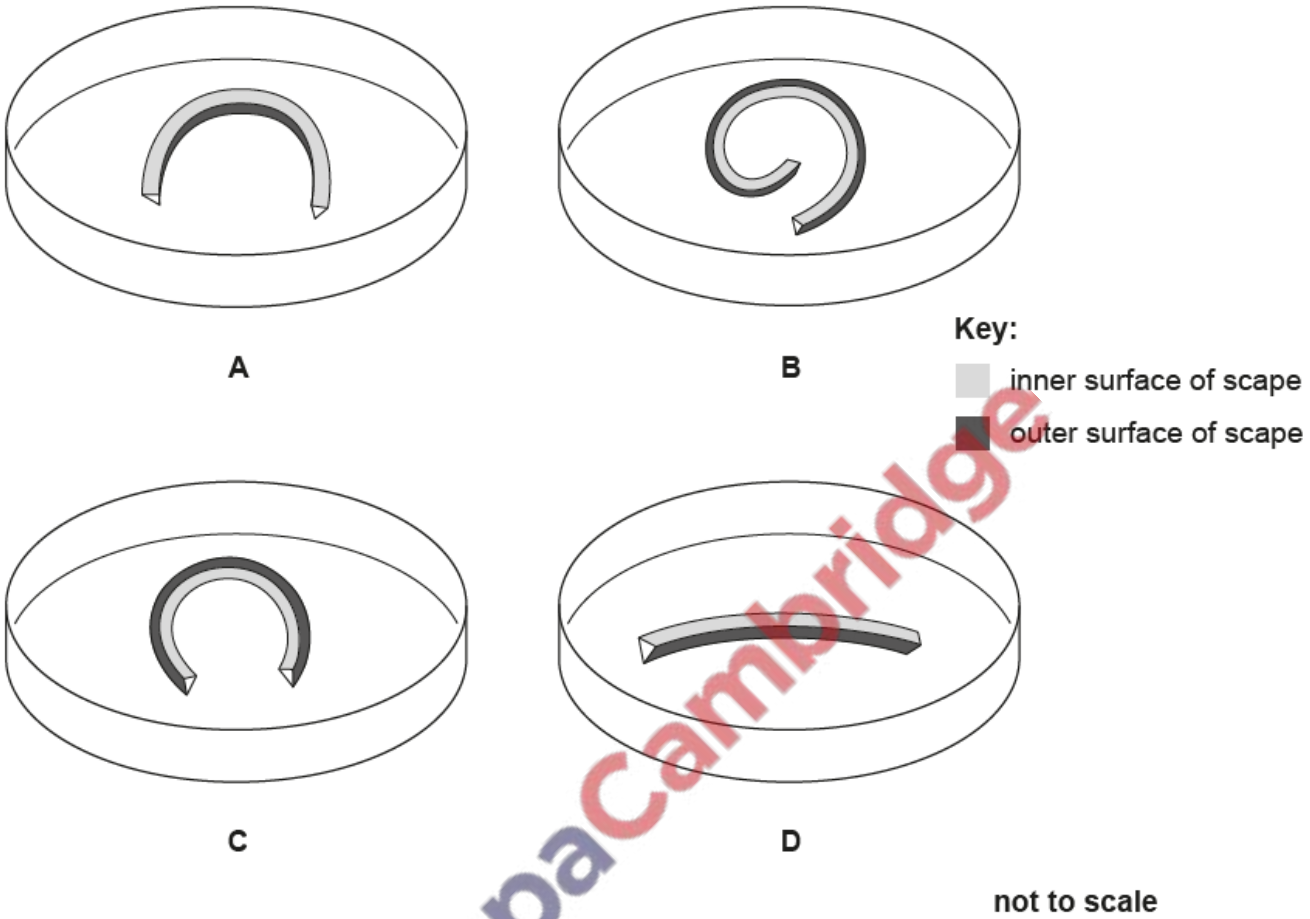

Fig. 4.4

Using the information in Fig. 4.3 and Fig. 4.4, deduce and explain which strip of scape was in the most concentrated salt solution.

strip of scape .....

explanation .....

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[3]

[Total: 10]

14. Nov/2022/Paper_43/No.5(c)

(c) The researchers monitored the water in the lake for pollution.

Outline how sewage should be treated so that the water it contains is safe to put into the lake.

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..... [5]