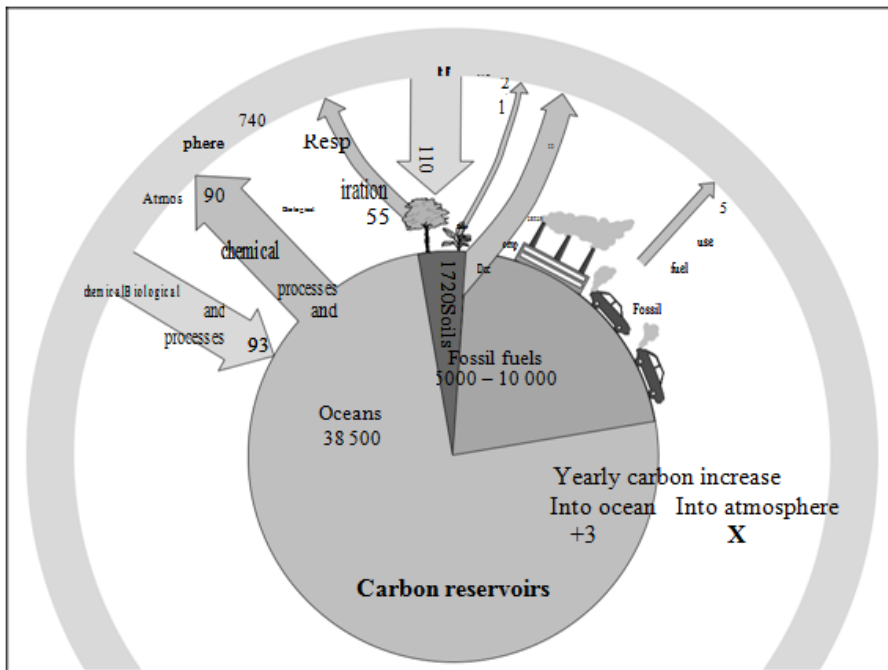


Global Warming

Q:1 The diagram shows the mass of carbon exchanged between carbon reservoirs and the atmosphere. The pie chart in the diagram shows the mass of carbon in three reservoirs: oceans, soils and fossil fuels. The figures are in billions of tonnes of carbon per year.



(a) Calculate X (the yearly carbon increase into the atmosphere). Show all your working.

X = _____ billion tonnes of carbon

(2 marks)

(b) Give one reason why deforestation increases the carbon dioxide concentration of the atmosphere.

(1 mark)

(c) Explain, as fully as you can, why the increasing concentration of carbon dioxide in the atmosphere is causing global warming.

(3 marks)

Q:2 Global warming will affect living organisms.

(a) Explain, as fully as you can, how agricultural activities are contributing to global warming.

(5 marks)

(b) Explain, as fully as you can, how natural selection leads to evolution.

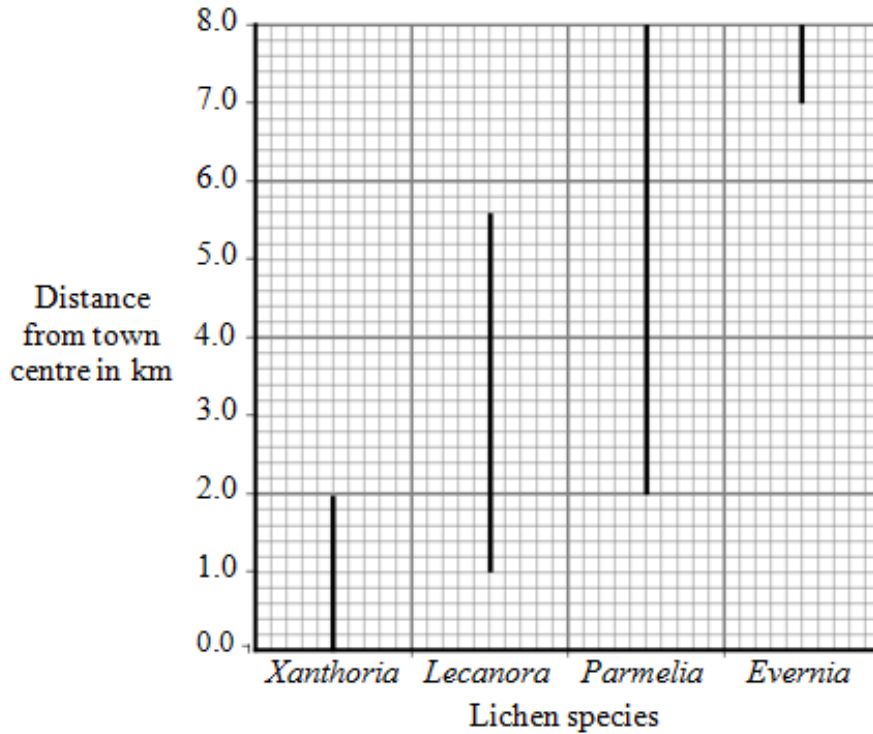
(3 marks)

Q:3 Lichens are sensitive to the amount of sulfur dioxide in the atmosphere. They are used as indicator species for the amount of air pollution. Air pollution is generally higher in town centres than in the countryside.

Students investigated the relationship between lichen species and distance from a town centre.

- On a map, they drew a transect (line) from the centre of the town to the countryside.
- They examined sites every 200 metres along the transect (line).
- At each site, they recorded the lichen species growing on trees and walls up to a height of 2 metres.

The graph shows their results. The lines on the graph indicate



(a) Give one way in which the students could have obtained more accurate results.

(1 mark)

(b)(i) Which lichen species was found over the greatest range?

(1 mark)

(b)(ii) Which lichen species grows only in the least polluted air?

(1 mark)

(c) One student concluded 'You can tell how much sulfur dioxide there is in the air by the amount of *Lecanora* growing'.

Give two reasons why this is not a valid conclusion.

1. _____

2. _____

(2 marks)

Q:4 The photograph shows water buffalo.

The water buffalo are being used to get a field ready for growing rice.



Draw a ring around the correct answer to complete each sentence.

(a) Rice crops add to global warming because rice produces

- methane.
- oxygen.
- sulfur dioxide.

(1 mark)

(b) Waste from the buffalo is spread on the rice fields.

This means that the farmer needs to use less

- fertiliser.
- herbicide.
- pesticide.

(1 mark)

(c) Using buffalo instead of a tractor helps to save

biodiversity.
fuel.
trees.

(1 mark)

(d) Global warming is caused by

acid rain.
the greenhouse effect.
toxic chemicals.

(1 mark)

Q:5 Scientists have discovered that curry spices affect sheep and cattle. Curry spices can reduce the amount of methane that grazing animals give off.

'Bad' bacteria in the animal's stomach produce methane. About 12 % of the animal's food is changed into methane.

The curry spice coriander works like an antibiotic. Adding coriander to animal food reduces methane production by about 40 %.

(a) (i) Why does adding coriander to an animal's food reduce methane production?

(1 mark)

(a) (ii) Explain one advantage to a farmer of adding coriander to the animal's food.

(2 marks)

(b) Farm animals give off large amounts of methane.

Explain the effects of adding large amounts of methane to the atmosphere.

(3 marks)

Q:6 Governments are encouraging businesses to reduce carbon dioxide emissions.

(a)(i) Explain the link between carbon dioxide emissions and the greenhouse effect.

(2 marks)

(a)(ii) Give one possible outcome of the greenhouse effect on the environment.

(1 mark)

(b) A large supermarket chain is advertising 'our goal is to make our business carbon neutral in the next five years'.

(b)(i) Why does the supermarket management think that this will attract more customers?

(1 mark)

(b)(ii) One step that the supermarket chain intends to take is to obtain as much food as possible from British sources.

Explain how this will help the environment.

(2 marks)

Q:7 Cattle give out methane.

(a) Explain how the methane given out by cattle is affecting the Earth's climate.

(3 marks)

TOTAL MARKS=38