



1 The world's rainforests could completely vanish in a hundred years at the current rate of deforestation.

(a) Suggest two reasons why humans are removing rainforest.

(2)

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(b) (i) Explain how deforestation can change the balance of gases in the atmosphere.

(2)

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(ii) Suggest how deforestation can change the soil structure.

(2)

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(c) Suggest how countries can reduce the impact of deforestation.

(2)

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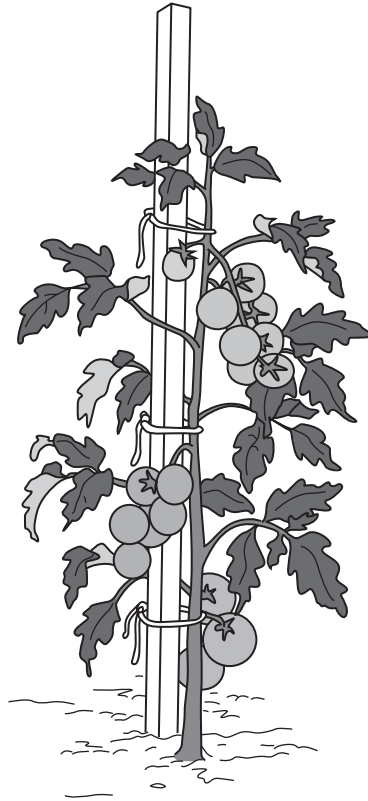
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(Total for Question = 8 marks)

2 The picture shows a tomato plant grown in a glasshouse.



The production of tomatoes is affected by an insect pest called the tomato leaf miner. The photograph shows a tomato leaf that has been damaged by the tomato leaf miner.



The adult female leaf miner lays eggs on tomato leaves that develop into maggots (larvae). These maggots feed on leaf mesophyll tissue inside the leaf.

(a) Explain how feeding on mesophyll tissue will affect tomato production.

(3)

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(b) (i) Pesticide are no longer successful in controlling the pest because the population of resistant forms of the leaf miner has increased.

Use your knowledge of natural selection to explain why the population of resistant forms of the leaf miner has increased.

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(ii) Suggest one other reason why using pesticide spray to control the leaf miner has not been successful.

(1)

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- (c) The release of an insect species called *Trichogramma* has been successful in controlling the leaf miner. *Trichogramma* feeds on the leaf miner.

Name this type of pest control.

(1)

- (d) Suggest why the release of sterile male tomato leaf miners has also been successful in controlling the leaf miner.

(2)

3 Deforestation has an effect on the environment.

(a) (i) What is meant by the term **deforestation**?

(1)

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(ii) Explain the effects that deforestation has on the balance of oxygen and carbon dioxide in the atmosphere.

(3)

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(b) The release of pollutant gases into the atmosphere also has effects on the environment.

Complete the table by giving the names of the missing gases, and the effects of the gases on the environment.

(5)

| Gas | Source | Effect on the environment |
|--------------|--|--------------------------------------|
| | cattle farming | |
| water vapour | combustion | |
| | burning fossil fuels | causes acid rain |
| | incomplete combustion | affects transport of oxygen in blood |
| CFC | refrigerators and air conditioning units | |

(Total for Question = 9 marks)

4 Carbon dioxide, methane and nitrous oxide are all greenhouse gases.

(a) (i) Name a source of nitrous oxide.

(1)

(ii) Name one other greenhouse gas.

(1)

(b) The table shows the masses of three different greenhouse gases released into the atmosphere in the United Kingdom from 1990 to 2010.

| Year | Mass of gas released each year in millions of tonnes | | |
|------|--|---------|---------------|
| | carbon dioxide | methane | nitrous oxide |
| 1990 | 590.3 | 4.6 | 0.2 |
| 1995 | 566.7 | 4.0 | 0.2 |
| 2000 | 550.5 | 3.0 | 0.1 |
| 2005 | 552.0 | 2.2 | 0.1 |
| 2010 | 496.0 | 2.1 | 0.1 |

(i) Calculate the percentage decrease in the mass of carbon dioxide released between 1990 and 2010.
Show your working.

(2)

percentage decrease in mass = %



(ii) Suggest why the mass of carbon dioxide released has decreased from 1990 to 2010.

(3)

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(iii) Describe the changes in the mass of methane released between 1990 and 2010.

(2)

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