AQA B3.4 Humans and their environment

209 minutes

209 marks

Q1. The following passage is from a newspaper report on a recent conference about global warming.

> If we keep pumping out greenhouse gases, islands in the Pacific will disappear; droughts in Africa will bring famine to 50 million people; floods in low lying places like Bangladesh will make 200 million people homeless; Venice will be submerged:

(a) Name **one** major greenhouse gas.

.....

(1)

(b) Explain how greenhouse gases may cause effects like those described in the passage.

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(4)

(Total 5 marks)

Q2. People have burned fossil fuels, eg. coal, in Britain for hundreds of years. Until about two hundred years ago the effects of this could only be seen in large towns where buildings became blackened with soot.

Now we can see other effects. For example animals are being killed in lakes in country areas far from towns and cities. This is because the water there has become much more acidic. Gases produced by burning fossil fuels are the cause of this.

(a) Name **two** of these gases.

1 .....

2 .....

(2)

(b) These gases are produced in towns. Explain how they can make lakes much more acidic in country areas.

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(2)

(c) The effects of burning fossil fuels are much greater now than they were two hundred years ago. Explain why.

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(2)

(Total 6 marks)

Q3. The following statement appeared in a popular journal. “Removal of tropical rainforests, more rice fields and greater industrialisation may be causing an increase in the ‘greenhouse effect’.”

Explain this statement as fully as you can.

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(Total 5 marks)

Q4. Some power stations burn coal to make electricity.
Smoke and waste gases go up the chimney.

Suggest **three** ways in which the smoke and waste gases from a power station can damage the environment.

1 .....

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2 .....

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3 .....

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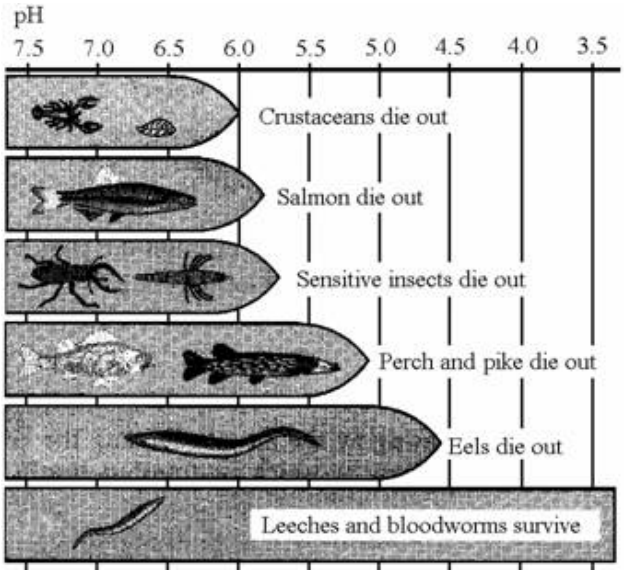
(Total 3 marks)

Q5. The chart shows how the pH of rivers and lakes affects what can survive in the water.



Adapted from Global Issues of our Time by
John Lidstone with permission of Cambridge University Press

(a) Use the information above to help you complete the following sentence.

The lowest pH condition in which sensitive insects can survive is ..... , but bloodworms can survive in conditions which are very ..... .

(2)

(b) (i) Some acidic gases are atmospheric pollutants.

Give **one** reason why carbon dioxide should **not** normally be considered an atmospheric pollutant.

.....

.....

(1)

(ii) Give the names of **two** acidic gases that are atmospheric pollutants.

..... and .....

(2)

(c) The article gives information about acidified lakes in Scandinavia.

Lapland, in the northern part of Scandinavia, has lakes which are very acidic and also the largest continuous forest damage zones in Europe.

A cause is pollution from two nickel extraction factories, at Nickel and Monchegrorsk in Russia. All trees and plants within 5 kilometres of Nickel and Monchegrorsk are now dead.

Adapted from Global Issues of our Time by John Lidstone with permission of Cambridge University Press

Explain how pollution from the nickel extraction factories, 140 kilometres inside Russia, can damage trees 200 kilometres away in Lapland.

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(3)

(Total 8 marks)

Q6. Many of the plants that we eat as fruits and vegetables in the UK are imported. The transport used to import foods accounts for about 2.5% of the UK's carbon dioxide emissions. During winter, it is necessary to import foods because most of the UK's fresh vegetables have to be grown in greenhouses. Energy is needed to heat and light these greenhouses.

Give **one** argument for and **one** against growing all of our vegetables in the UK. These arguments should consider the environmental effect of carbon dioxide emissions.

Argument for:

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Argument against:

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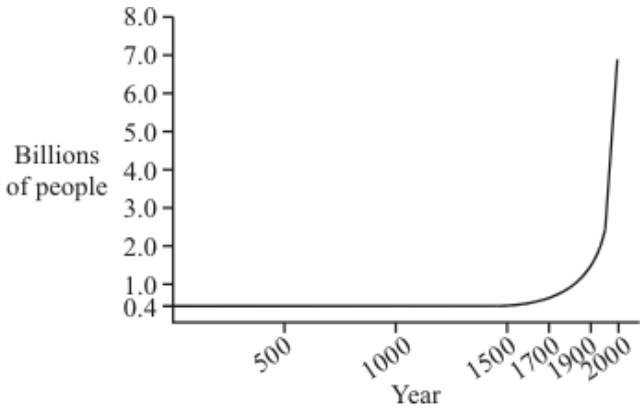
(Total 3 marks)

Q7. Improving the quality of life for everyone without damaging the planet for the future is known as sustainable development.
One problem is the rapid growth in the Earth's population of humans during the last 500 years. This is shown by the graph.



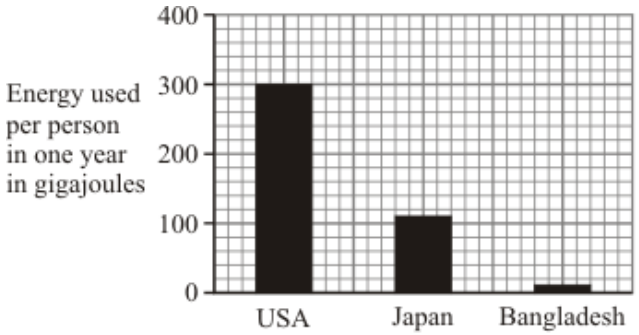
(a) When the Earth's population was much smaller, the effects of human activities on forests were usually small and local.
In the past 500 years there has been large-scale deforestation in some areas. Give **two** reasons for this.

1 .....

2 .....

(2)

(b) Look at the bar chart. It shows the average amount of energy used by each person in one year in the USA, Japan and Bangladesh.



(i) Suggest **one** reason why so much more energy is used per person in the USA than in Bangladesh.

.....

.....

(1)

(ii) Using a lot of resources for energy harms the Earth.
Explain why.

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(2)

(c) As we are using more resources, waste management is becoming more important. In the UK much of the solid waste is still being dumped in landfill sites. In 1996, the UK government introduced a landfill tax because landfill sites were being used up. However, the year after the landfill tax was introduced it was estimated that 18 million tonnes of landfill waste was not reported. The government was trying to encourage other forms of waste management, such as:

- reduce waste
- reuse waste
- recycle waste

(i) Explain the main problem caused by the landfill tax.

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(2)

(ii) Describe **one** example of how each of the different forms of waste management can be put into practice.

Reduce waste .....

.....

Reuse waste .....

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Recycle waste .....

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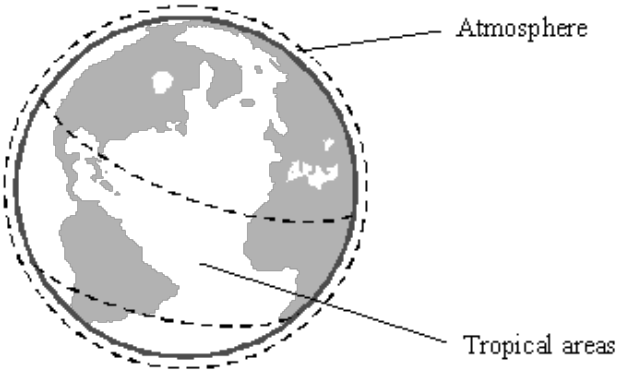
(3)

(Total 10 marks)

Q8. Recently the concentration of carbon dioxide in the Earth's atmosphere has increased slightly. This may be linked to an increase in the 'greenhouse effect'.



(a) The human population has grown rapidly. This has caused an increase in the amount of land used for agriculture, especially in tropical areas.
This has helped to increase the carbon dioxide in the atmosphere.

Give **two** reasons for this.

1 .....

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2 .....

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(2)

(b) The increased 'greenhouse effect' has caused an increase in the Earth's average temperature.

Give **two** possible environmental effects of this increased average temperature.

1 .....

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2 .....

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(2)

(c) Name another gas, produced by cattle and rice fields, that also helps cause the 'greenhouse effect'.

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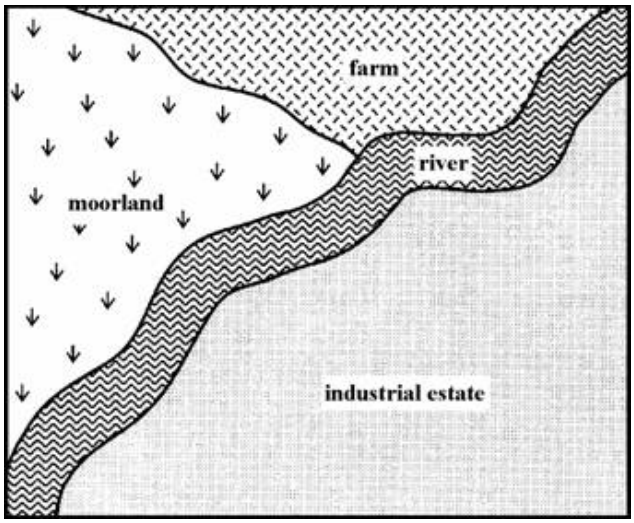
(1)

(Total 5 marks)

Q9. The drawing shows an industrial estate and the neighbouring area.



(a) Use words from the list to complete the sentences about effects on the environment.

fertilisers **fuels** **nitrogen** **oxygen**

pesticides **smoke** **sulphur dioxide**

Factories in the industrial estate burn ..... . This pollutes the air with ..... and ..... .

The farm may pollute the river with chemicals such as .....

and ..... .

(5)

(b) Describe how sulphur dioxide may damage the environment.

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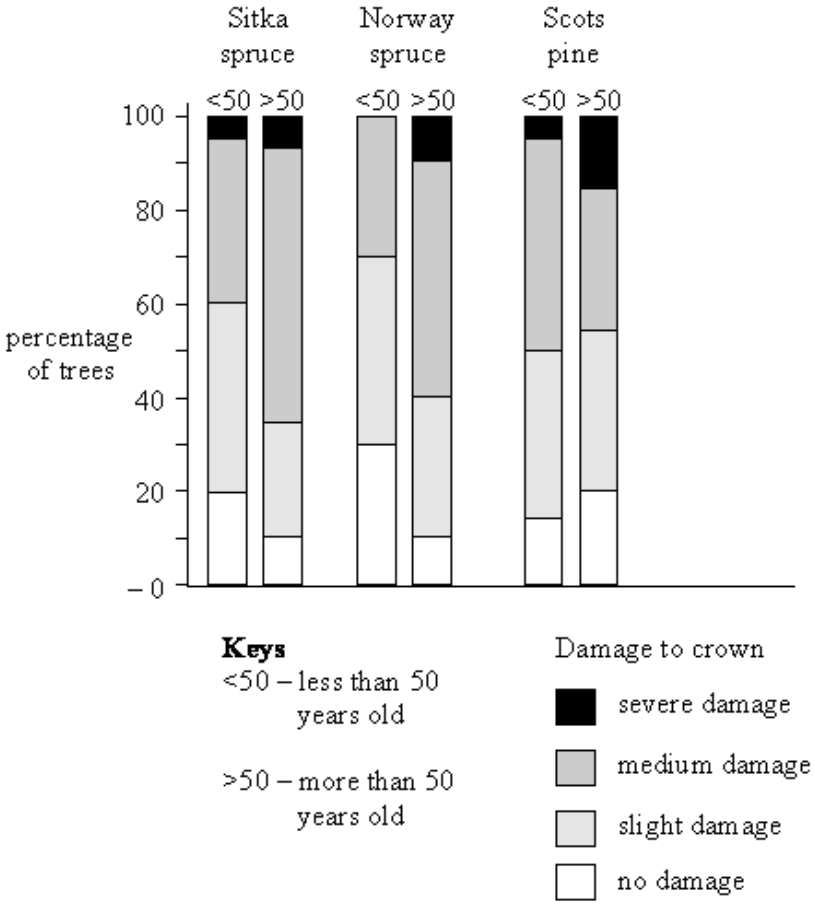
(2)
(Total 7 marks)

Q10. The following are extracts from a Nature Conservancy Council fact sheet.

Trees have been affected by smoke and sulphur dioxide in industrial areas for over 100 years. However, since 1970 people have noticed the rapid increase in a new form of forest damage. The damage involves progressive thinning of the crown of the tree by the loss of leaves, eventually leading to the death of the tree.

Damage to the crowns of three species of tree, Sitka spruce, Norway spruce and Scots pine surveyed in British forests in 1987



(a) Which species and age of trees, had

(i) the highest percentage of trees with no damage to the crown?

.....

(ii) the highest percentage of trees with severe damage to the crown?

.....

(2)

(b) What is the relationship between the age of the trees and damage to the crown?

.....

.....

(1)

(c) The world-wide concentration of sulphur dioxide in the atmosphere has risen considerably over the last hundred years.

(i) Describe, as fully as you can, **one** major source of sulphur dioxide in the atmosphere.

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(2)

(ii) Suggest and explain why this large increase in sulphur dioxide concentration has occurred.

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(2)

(iii) Describe, as fully as you can, how the sulphur dioxide in the atmosphere reaches trees in forests.

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(2)

(Total 9 marks)

Q11. Coastal grazing marshes provide grazing for cattle and sheep. They also support huge numbers of birds and a wide range of water plant and animal communities. Some of these communities include nationally rare species.

There has been a dramatic reduction in the extent of the grazing marshes in the estuary of the river Thames in recent years. These grazing marshes are downstream from the capital city, London.

The table below shows what some of the grazing marshes have been converted into.

CONVERTED TO	MEAN ANNUAL RATE OF CONVERTION TO OTHER LAND-USED (Hectares/Year)			
	1935-68	1968-72	1972-81	1981-89
Roads and buildings	83	186	142	45
Formal open spaces (parks)	11	30	12	27
Arable (crop-growing)	49	188	90	102
Open water	9	9	7	4
Woodland	3	1	3	2

(a) Explain, as fully as you can, why you think it has been necessary to convert these marshes to other uses.

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(3)

(b) Explain, as fully as you can, the possible further effects that these changes in land-use might have on the environment and on the organisms which live in the environment.

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(4)

(Total 7 marks)

Q12. Tropical rainforests are being cut down to provide hardwood for furniture and to make way for roads and for agriculture. In the 1990s they were being destroyed at a rate of 15 hectares per minute.

(a) Calculate the number of hectares destroyed in **one** day.

..... hectares

(1)

(b) Soil erosion can be increased by deforestation. Explain how.

.....

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(2)

(c) (i) The gas carbon dioxide can contribute to the greenhouse effect. Explain how deforestation over a wide area can contribute to the greenhouse effect.

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(3)

(ii) One result of the increased greenhouse effect is global warming. Describe **two** possible effects of global warming on the world.

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.....

.....

(2)

(iii) It is possible that planting new forests could stop global warming. Explain why this could happen.

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(2)

(Total 10 marks)

Q13. Explain how cars and factories can cause acid rain.

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(Total 4 marks)

Q14. The table shows the effects that two different concentrations of sulphur dioxide in the air had on the growth of rye grass plants.

Sulphur dioxide concentration in the air in micrograms per m^3	**9.0**	**191.0**
Number of leaves per plant	85.6	47.3
Total leaf area in cm^2	417.2	203.6
Dry mass of stubble in grams	0.48	0.22

(a) What human activity releases sulphur dioxide into the air?

.....

(1)

(b) (i) What effect does sulphur dioxide have on rainwater?

.....

.....

(1)

(ii) Use information from the table to describe **one** effect of sulphur dioxide on the leaves of the grass plants.

.....

.....

(1)

(c) The stubble consists of the bases of the stems of the plants and the roots left in the soil after harvesting.

Use your answer to part (b) to explain why the dry mass of the stubble was less at the higher concentration of sulphur dioxide.

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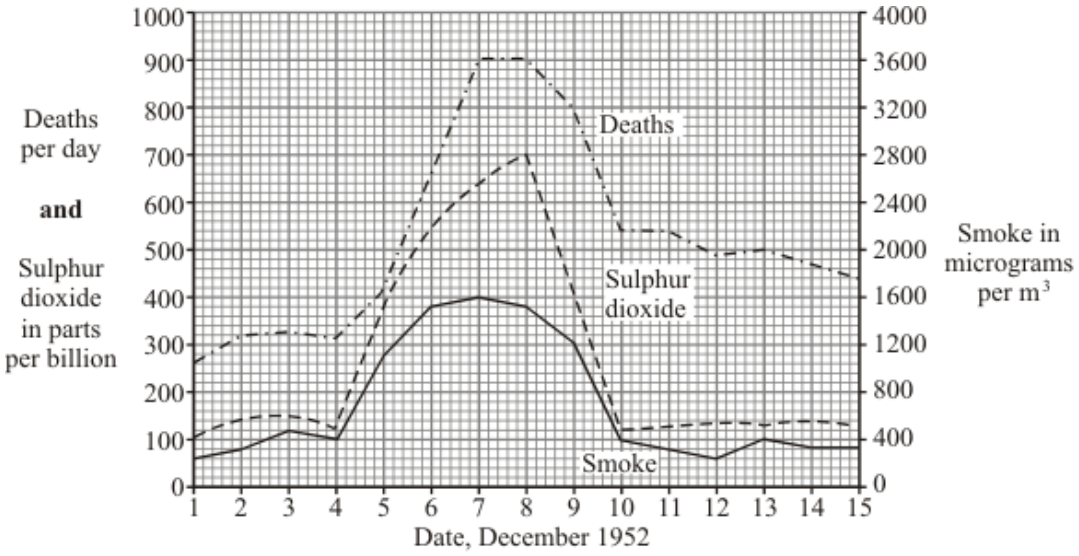
(2)

(Total 5 marks)

Q15. In December 1952, there was a thick fog in London. The graph shows changes in the amounts of sulphur dioxide and smoke in the air and the number of people dying during this period.



(a) Describe **one** human activity which releases sulphur dioxide into the air.

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(1)

(b) Human deaths during this period were caused mainly by lung diseases.

(i) Why were the lungs particularly affected?

.....

.....

(1)

(ii) Give evidence from the graph which suggests that sulphur dioxide might have caused these deaths.

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(1)

(iii) Does the graph prove that sulphur dioxide caused these deaths? Explain your answer.

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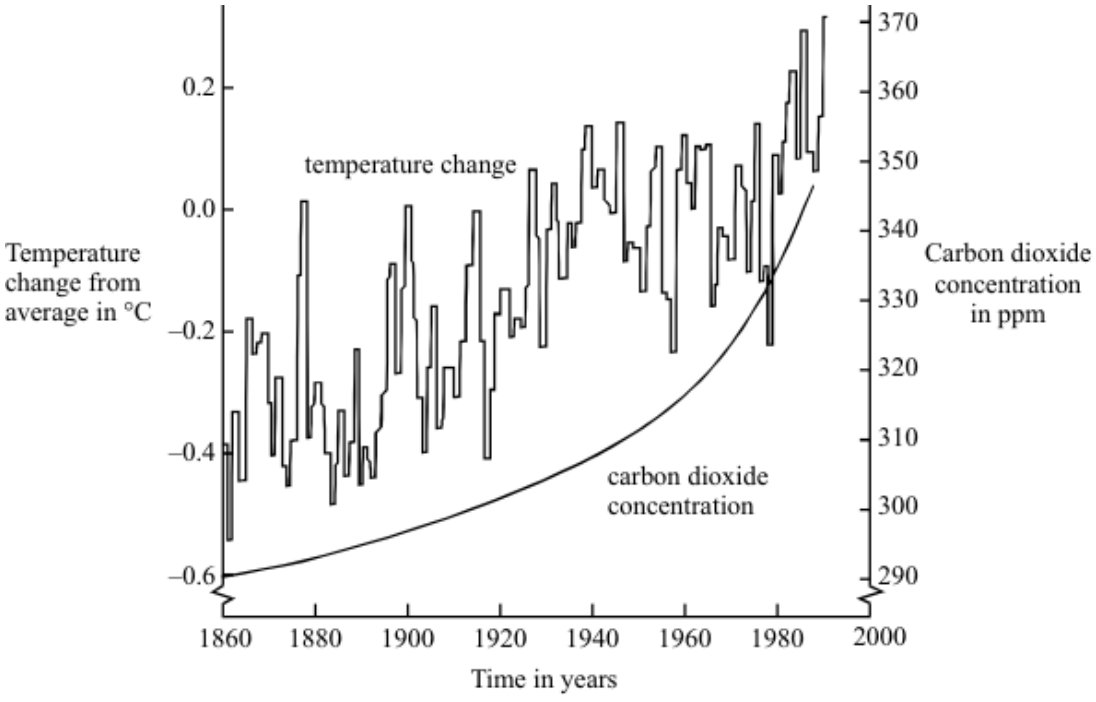
.....

(1)

(Total 4 marks)

Q16. The graph shows changes in temperature and in carbon dioxide concentration in the earth's atmosphere between 1860 and 1990.



(a) Give **two** human activities which may have helped to increase the concentration of carbon dioxide in the atmosphere.

1 .....

2 .....

(2)

(b) (i) Describe the changes in temperature shown by the graph between 1860 and 1990.

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.....

.....

(2)

(ii) Do the data in the graph prove that increased carbon dioxide concentrations in the atmosphere caused the changes in temperature you described in part (b)(i)? Give a reason for your answer.

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(1)

(c) Describe **one** way in which a change in temperature such as that shown in the graph might affect the environment.

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(1)

(Total 6 marks)

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Read the article about sustainable cod fishing.

> Every December the European Commission makes proposals for cod fishing quotas in European Union (EU) waters. These quotas take into account data obtained by scientists.
>
> Scientists calculate what proportion of the cod stock is being caught each year. They do this by working out the numbers in each age-group of cod.
>
> Every year the fishermen say the scientists are exaggerating the danger to the stocks in the North Sea. The scientists say the fishermen are threatening their own long-term livelihoods by ignoring their warnings of a collapse of cod populations.
>
> The scientists say that fishermen go only to parts of the sea where there are a lot of cod, so they get the wrong idea of the number of cod in the whole area.

(a) The scientists and the fishermen have different opinions about the size of the cod population.

Explain why.

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(2)

(b) The final decision on how many cod the fishermen are allowed to catch may not depend entirely on the data produced by the scientists.

Suggest **two** reasons for this.

1. .....

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2. .....

.....

(2)

(Total 4 marks)

Q18. Deforestation affects the environment in many ways.

(a) Deforestation increases the amount of carbon dioxide in the atmosphere.

Give **two** reasons why.

1 .....

2 .....

.....

(2)

(b) Deforestation also results in a loss of *biodiversity*.

(i) What is meant by *biodiversity*?

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(1)

(ii) Give **one** reason why it is important to prevent organisms from becoming extinct.

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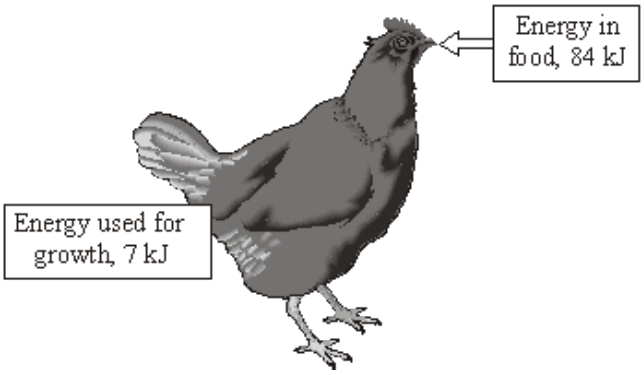
(1)

(Total 4 marks)

Q19. The diagram shows what happens to some of the energy in the food that a chicken eats.



(a) Calculate the percentage of energy used for growth.

Show clearly how you work out your answer.

.....

.....

Energy used for growth = ... %

(2)

(b) The energy that is not transferred into growth is lost.

Give **three** ways in which this energy is lost.

1 .....

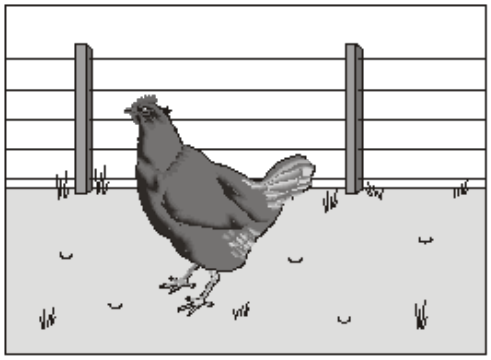
2 .....

3 .....

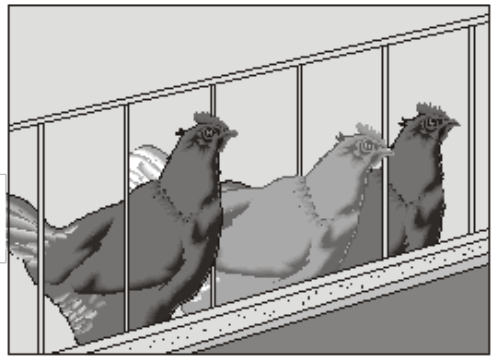
(3)

(c) The pictures show two ways of keeping chickens to produce eggs.

Chickens kept outdoors (free-range)



Chickens kept in cages (battery chickens)



Battery chickens produce more eggs per year than free-range chickens.

Suggest **one** reason why.

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(1)

(d) The animals that we raise for food are usually herbivores (plant eaters) rather than carnivores (flesh eaters).

Explain why.

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(2)

(Total 8 marks)

Q20. A large supermarket chain is advertising ‘our goal is to make our business carbon neutral in the next five years’.

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

.....

.....

(1)

(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.

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(2)
(Total 3 marks)

Q21. Read the passage below about biogas production in Sri Lanka, which is a country with a much warmer climate than the UK.

> Mr Ratnayake is a farmer. Using nothing more than cow dung, he has enough power to cook and provide heat and light for his home without using a single piece of wood. He collects the manure from his cows in their cattle shed. He then mixes the manure with water and leaves it to ferment in a large concrete pit. The gas produced is collected in a simple storage tank and is piped into his house for use.
>
> The dried manure left after this biogas is generated is richer than ordinary manure. It makes a good organic fertiliser for Mr Ratnayake’s crops. He can then sell his crops at a higher price as they are organic produce.
>
> *http://www. i-sis.org.uk*

(a) (i) What is the fuel gas present in biogas?

.....

(1)

(ii) Name the process which produces biogas.

.....

(1)

(b) (i) Give **two** ways in which Mr Ratnayake benefits from making biogas as described in the passage.

1 .....

.....

2 .....

.....

(2)

(ii) This design of biogas generator works well in Sri Lanka. It would not work so well in the UK.

Explain why.

.....

.....

.....

.....

(2)
(Total 6 marks)

Q22. (a) Tuna fish are carnivores. In the wild they feed on smaller fish called herring. Herring feed on plankton. Tuna can be attacked by parasitic worms which feed on their flesh.

(i) In the space below sketch the appearance of a pyramid of biomass for this food chain.

Do not forget to label each section of the pyramid.

(2)

(ii) If a tuna eats 1 kg of herring, it gains about 65 g in mass.

Give **two** reasons why so little of the mass of the herring is converted into mass of the tuna.

1 .....

.....

2 .....

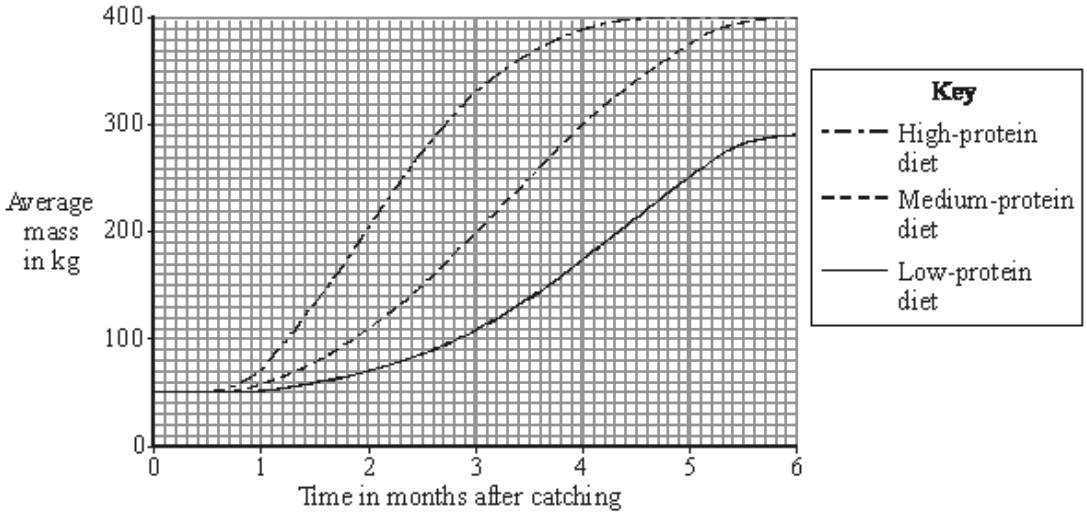
.....

(2)

(b) Young tuna are caught by fish farmers and reared in large pens in the sea.

The fish are fed more food than they would normally catch themselves so they grow quickly. When they reach 400 kg they are sold.

The graph below shows the effect of feeding tuna different amounts of protein in their food.



(i) Calculate the average increase in mass per month of the fish fed on the low-protein diet over the six months.

Show clearly how you work out your answer.

.....

.....

Average increase in mass per month ..... kg

(2)

(ii) There is not enough information in the graph to allow the fish farmer to decide whether to use the high-protein diet or the medium-protein diet.

Suggest **one** other piece of information that he needs in order to make this decision.

.....

.....

(1)

(c) Some consumers will not buy tuna grown in this way.

Suggest **one** reason for their decision.

.....

.....

(1)

(Total 8 marks)

Q23. (a) Name the fuel gas present in biogas.

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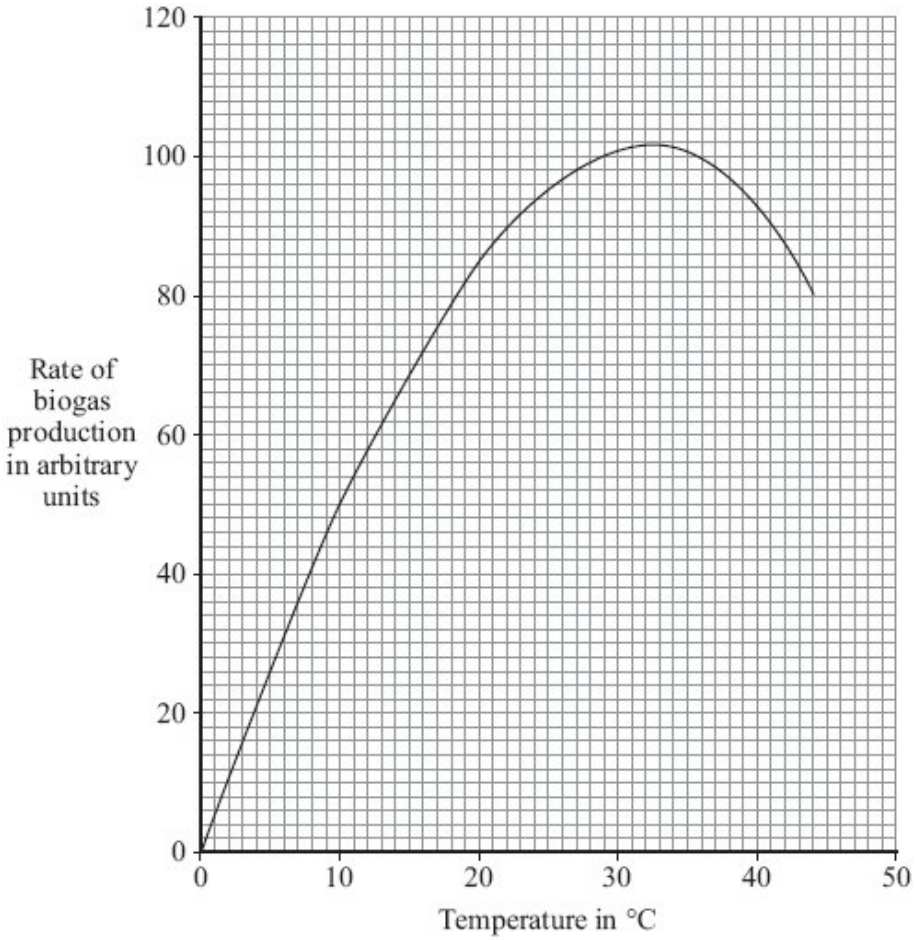
(1)

(b) Name the process that produces biogas.

.....

(1)

(c) The graph shows the effect of temperature on the rate of biogas production.



(i) What is the best temperature for biogas production? .....°C

(1)

(ii) In India, daytime temperatures can sometimes be higher than 40 °C.
It is useful to place the biogas generator underground.

Use information from the graph to suggest why.

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(2)

(d) Temperatures at the UK sewage works vary between 0 °C and 25 °C.
The UK biogas generator has concrete walls, 60 cm thick.

How does the thickness of the walls affect the rate of biogas production?

Give a reason for your answer.

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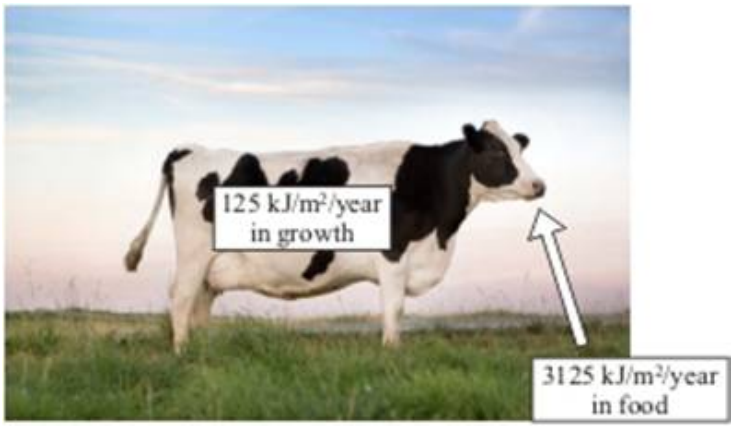
(2)
(Total 7 marks)

Q24. The photograph shows what happens to some of the energy in the food that a cow eats.



(a) Calculate the percentage of the energy in the cow's food that is transferred into new growth.

Show clearly how you work out your answer.

.....

.....

Answer = ...%

(2)

(b) The energy from the cow's food which is not transferred into new growth is lost.

Give **three** ways in which this energy is lost.

1 .....

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2 .....

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3 .....

.....

(3)

(c) The animals that we raise for food are usually herbivores (plant eaters) rather than carnivores (flesh eaters).

Explain why.

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.....

.....

.....

.....

(2)
(Total 7 marks)

Q25. Read the article about sustainable cod fishing.

Every December the European Commission makes suggestions for cod fishing quotas in European Union (EU) waters. These quotas use data from scientists' investigations.

Scientists calculate what proportion of the cod stock is being caught each year. Scientists do this by working out the numbers in each age-group of cod.

Every year the fishermen say the scientists are making the danger to the stocks in the North Sea seem worse. The scientists say the fishermen might lose their jobs because the fishermen are ignoring warnings of the cod numbers going down.

The scientists say that fishermen go only to parts of the sea where there are a lot of cod, so the fishermen get the wrong idea of the number of cod in the whole area.

(a) The scientists and the fishermen have different opinions about the size of the cod population.

Explain why.

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(2)

(b) (i) Give **one** method, **other than** quotas, by which fish stocks can be preserved.

.....

(1)

(ii) State how the method you have given in (b)(i) helps to preserve fish stocks.

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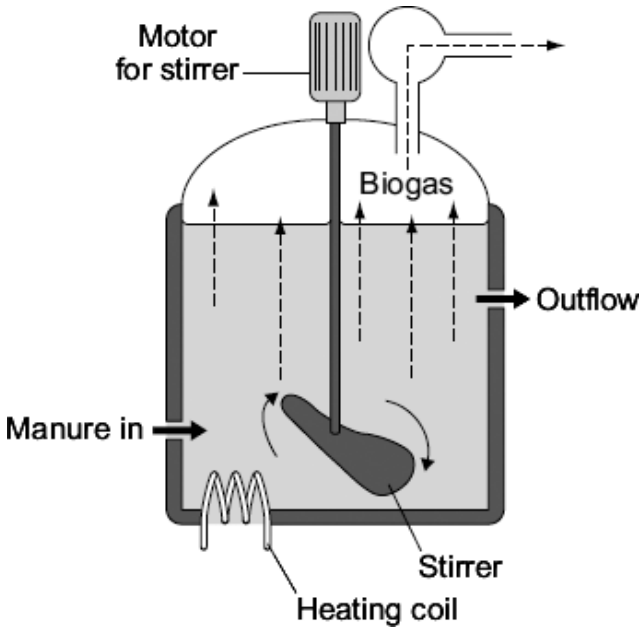
(1)
(Total 4 marks)

Q26. The diagram shows one type of *anaerobic* digester. This is used to produce biogas.



(a) (i) What does *anaerobic* mean?

.....

.....

(1)

(ii) The concentration of solids fed into this digester must be kept very low.

Suggest **one** reason why.

.....

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(1)

(iii) This digester is more expensive to run than some other simpler designs of biogas generator.

Suggest **one** reason why.

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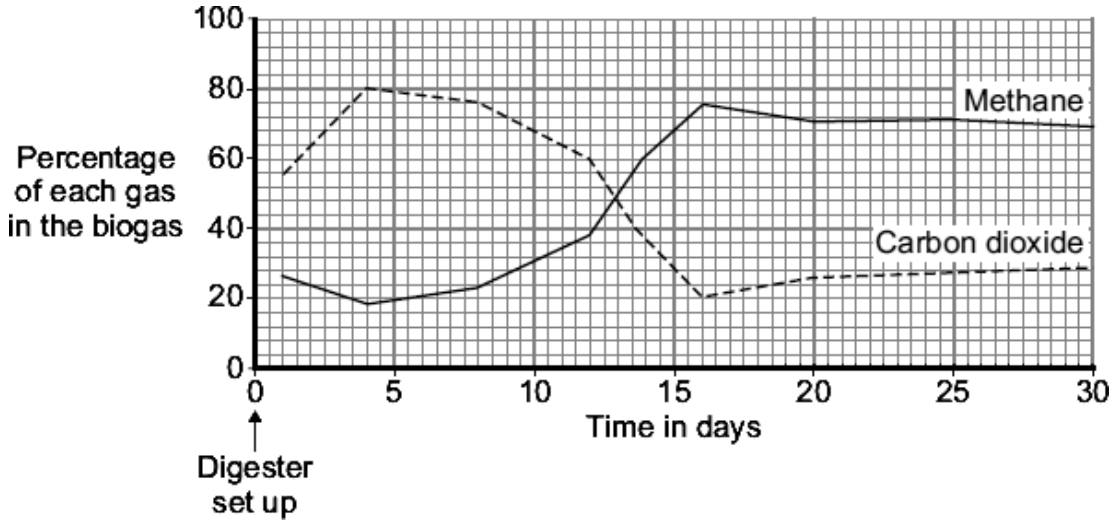
(1)

(b) The graph shows how the composition of the biogas produced by the digester changed over the first 30 days after the digester was set up.



Use information from the graph to answer the following questions.

(i) Describe how the percentage of carbon dioxide changed over the 30 days.

.....

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.....

.....

(3)

(ii) On which day was the best quality biogas produced? .....

(1)

(c) Four days after the digester was first set up, the biogas contained a high percentage of carbon dioxide.

Suggest an explanation for this.

.....

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.....

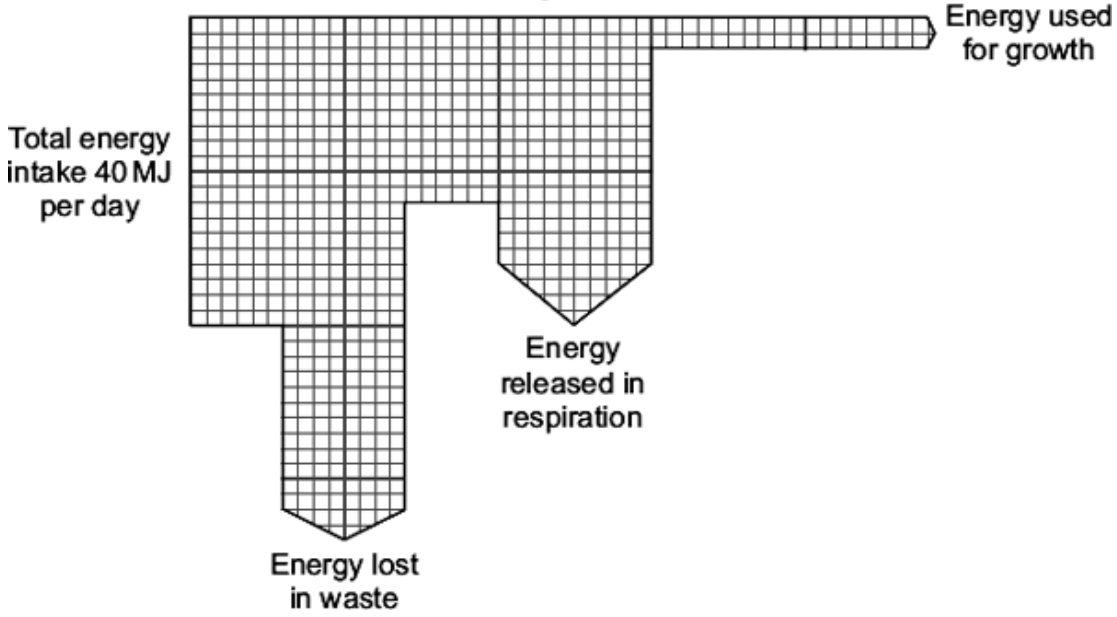
.....

(2)

(Total 9 marks)

Q27. (a) **Diagram 1** represents what happens to the energy in the food eaten by a herbivore (an animal that eats plants).

Diagram 1



(i) How much energy is released in respiration by the herbivore?

.....

.....

Answer ..... MJ per day

(1)

(ii) What proportion of the total energy intake of the herbivore is used for growth?

Show clearly how you work out your answer.

.....

.....

.....

Proportion .....

(2)

(b) Give **two** ways in which the energy, released in respiration, is used by a herbivore.

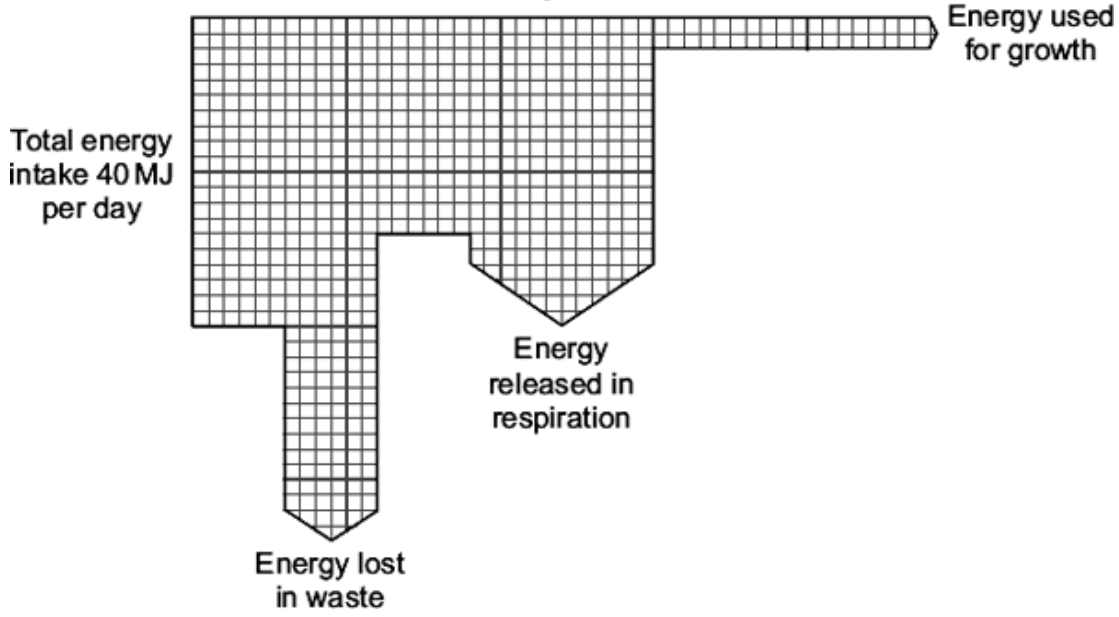
1 .....

2 .....

(2)

(c) **Diagram 2** represents what happens to the energy in the food eaten by a carnivore (an animal that eats other animals).

Diagram 2



The carnivore releases a greater proportion of energy in respiration than the herbivore.

Suggest **one** reason for this.

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(1)

(d) Some farmers keep their animals outdoors. Other farmers keep their animals indoors.

Keeping farm animals indoors increases the proportion of energy in their food that is converted into growth.

Give **two** reasons why.

1 .....

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2 .....

.....

(2)

(Total 8 marks)

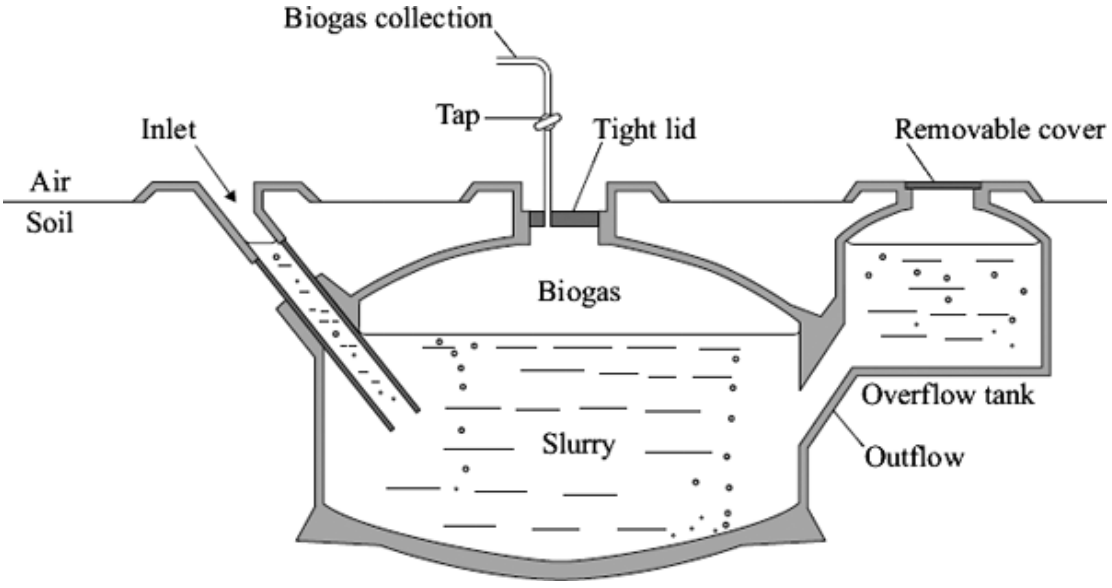
Q28. Biogas can be produced from waste materials that contain carbohydrates.

(a) Complete the sentence.

The main fuel gas present in biogas is .....

(1)

(b) The diagram shows one type of biogas generator.



(i) Suggest **two** advantages of having the biogas generator underground.

1 .....

.....

2 .....

.....

(2)

(ii) It is important that the level of liquid in the inlet and in the overflow tank is above that of the slurry.

Explain why.

.....

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(1)

(c) Temperatures in the UK are usually between 0 °C and 25 °C.

At a sewage works in the UK, some of the biogas produced from sewage sludge is burned and is used to heat water. The hot water is then pumped through metal pipes which pass back through the biogas generator.

Explain why this would be helpful in biogas production.

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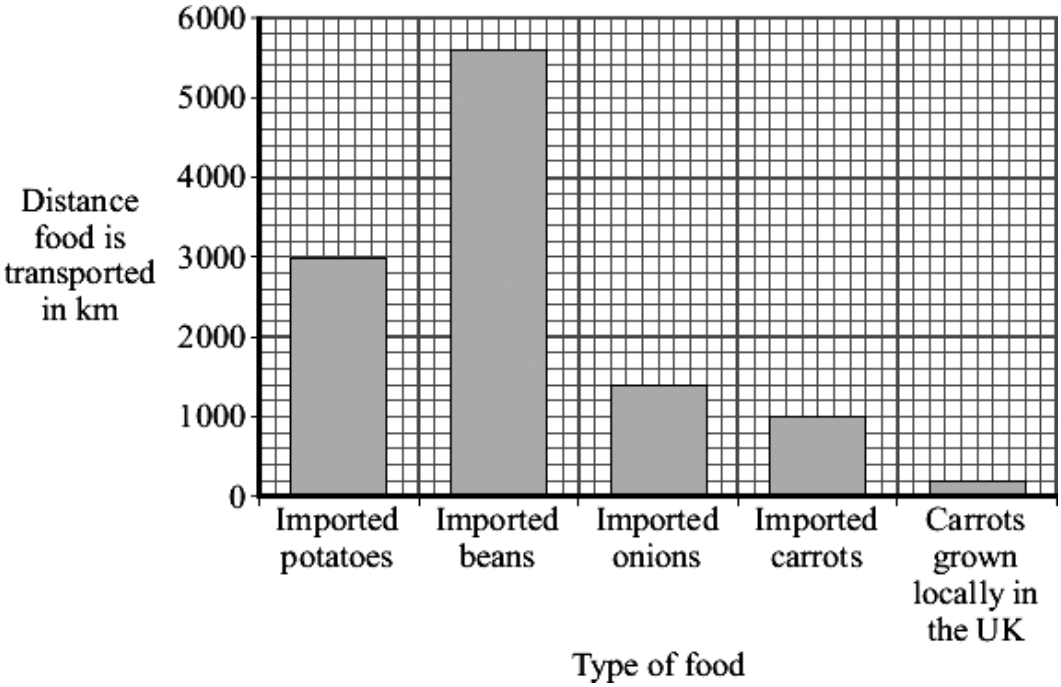
(2)
(Total 6 marks)

Q29. Some people are concerned about the distance that food is transported between the grower and the supermarket.

The bar chart shows the distances for some foods.



(a) Both imported carrots and carrots grown locally in the UK can be bought in supermarkets all year round.

How many times further are imported carrots transported than carrots grown locally in the UK?

Show clearly how you work out your answer.

.....

.....

..... times

(1)

(b) Many of the beans sold in supermarkets in the UK are grown in Kenya, a tropical country in Africa.

Beans grow faster in Kenya than they do in the UK.

Suggest and explain **one** reason why.

Reason .....

.....

Explanation .....

.....

(2)

(c) Many people believe that we should buy locally produced food instead of food imported from abroad.

Explain how this would help the environment.

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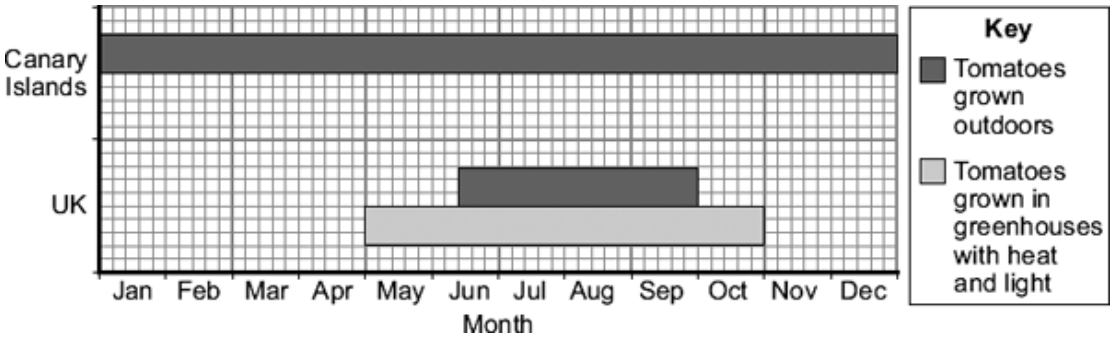
(2)
(Total 5 marks)

Q30. Tomatoes are grown in greenhouses in the UK and outdoors in the UK and the Canary Islands.

The chart shows in which months these tomatoes can be bought in shops in the UK.



The Canary Islands are about 3000 km from the UK.

Some people prefer to buy tomatoes grown in the UK.

What are the **advantages** and **disadvantages** of buying tomatoes grown in the UK, instead of buying tomatoes grown in the Canary Islands?

Advantages of buying tomatoes grown in the UK

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Disadvantages of buying tomatoes grown in the UK

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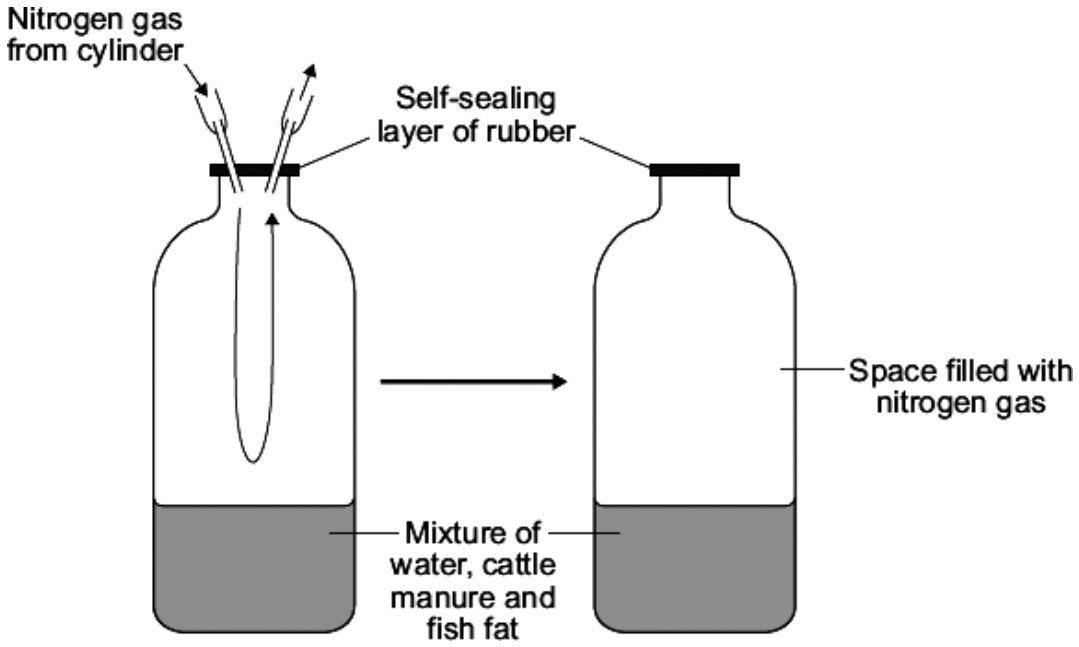
(3)
(Total 3 marks)

Q31. Norway has a large fishing industry. Norwegian scientists investigated the effect of adding waste fish fat to cattle manure to improve the production of biogas.

The scientists set up many jars containing different concentrations of fish fat added to the cattle manure. The air in each jar was removed and replaced with pure nitrogen gas.

The diagram shows how one of these jars was set up.



The scientists then kept all the jars in an incubator at 35 °C for 6 weeks.

(a) The scientists sealed each jar with a layer of rubber and replaced the air in the jars with nitrogen gas.

Explain why.

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(2)

(b) The scientists removed samples of gas from each jar at intervals over the 6 weeks.

The table shows some of the scientists' results.

Contents of jar	Yield of biogas in cm^3 per gram	Yield of methane in cm^3 per gram	Proportion of methane in the biogas
Cattle manure	426	256	0.60
Cattle manure + 2.5 % fish fat	686	426	
Cattle manure + 5 % fish fat	861	543	0.63
Cattle manure + 10 % fish fat	999	630	0.63

(i) The final column of the table shows the proportion of methane in the biogas.

Apart from the methane and the added nitrogen, name the other gas that makes up most of the rest of the biogas.

.....

(1)

(ii) Calculate the proportion of methane in the biogas when 2.5 % fish fat was added to the manure.

Show clearly how you work out your answer.

.....

.....

Proportion of methane = ...

(2)

(iii) Describe the effects on biogas production of adding fish fat to cattle manure.

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.....

.....

(2)

(iv) Olaf is a Norwegian farmer. Olaf's farm is 110 kilometres from the sea. He has a biogas generator on his farm. Olaf adds manure from his 50 cattle to his biogas generator.

Olaf decided **not** to add fish fat to his biogas generator.

Suggest **one** reason why.

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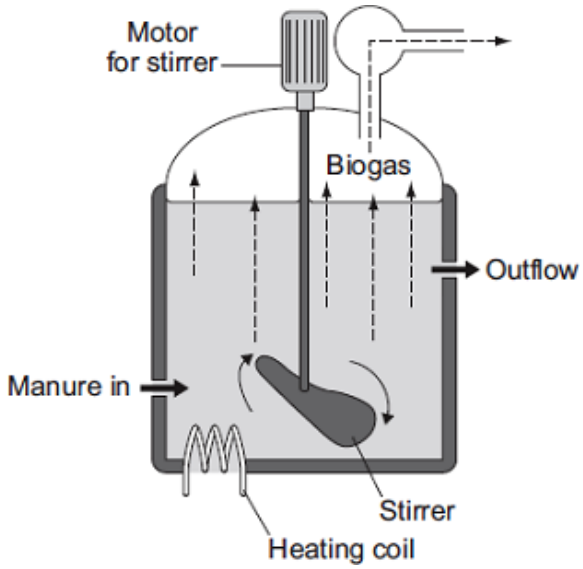
(1)

(Total 8 marks)

Q32. The diagram shows one type of *anaerobic* digester. The digester is used to produce biogas.



(a) (i) What does *anaerobic* mean?

.....

.....

(1)

(ii) The concentration of solids that are fed into this digester must be kept very low.

Suggest **one** reason why.

.....

.....

(1)

(iii) This digester is more expensive to run than some other simpler designs of biogas generator.

Suggest **one** reason why.

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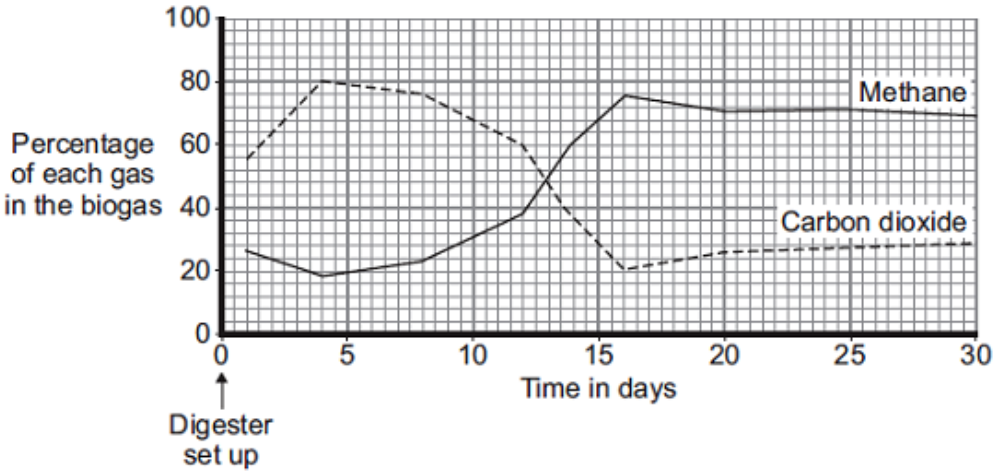
(1)

(b) The graph shows how the composition of the biogas produced by the digester changed over the first 30 days after the digester was set up.



Use information from the graph to answer the following questions.

(i) Describe how the percentage of carbon dioxide changed over the 30 days.

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(3)

(ii) On which day was the best quality biogas produced? .....

(1)

(c) Four days after the digester was first set up, the biogas contained a high percentage of carbon dioxide.

Suggest an explanation for this.

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(2)

(Total 9 marks)

Q33. Deforestation affects the environment in many ways.

(a) Deforestation increases the amount of carbon dioxide in the atmosphere.

Give **two** reasons why.

1 .....

.....

2 .....

.....

(2)

(b) Deforestation also results in a loss of *biodiversity*.

(i) What is meant by *biodiversity*?

.....

.....

(1)

(ii) Give **two** reasons why it is important to prevent organisms becoming extinct.

1 .....

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2 .....

.....

(2)

(Total 5 marks)

Q34. There are many ways to increase the efficiency of food production.

(a) The table shows the energy available to humans from two different food chains.

Food chain	Energy transferred to humans in kJ per hectare of crop
Wheat → humans	900 000
Wheat → pigs → humans	90 000

(i) Compare the amount of energy the two food chains transfer to humans.

.....

.....

(1)

(ii) Give **one** reason for the difference in the amount of energy the two food chains transfer to humans.

.....

.....

(1)

(b) *In this question you will be assessed on using good English, organising information clearly and using specialist terms where appropriate.*

Give methods used in the factory farming of animals.
Explain the advantages and disadvantages of these methods.

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(6)
(Total 8 marks)