

FOR OFFICIAL USE

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**X055/101**

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Total Marks

NATIONAL  
QUALIFICATIONS  
2007

WEDNESDAY, 6 JUNE  
1.00 PM – 2.30 PM

MANAGING  
ENVIRONMENTAL  
RESOURCES  
INTERMEDIATE 1

**Fill in these boxes and read what is printed below.**

Full name of centre

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Town

--

Forename(s)

--

Surname

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Date of birth

Day Month Year

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Scottish candidate number

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Number of seat

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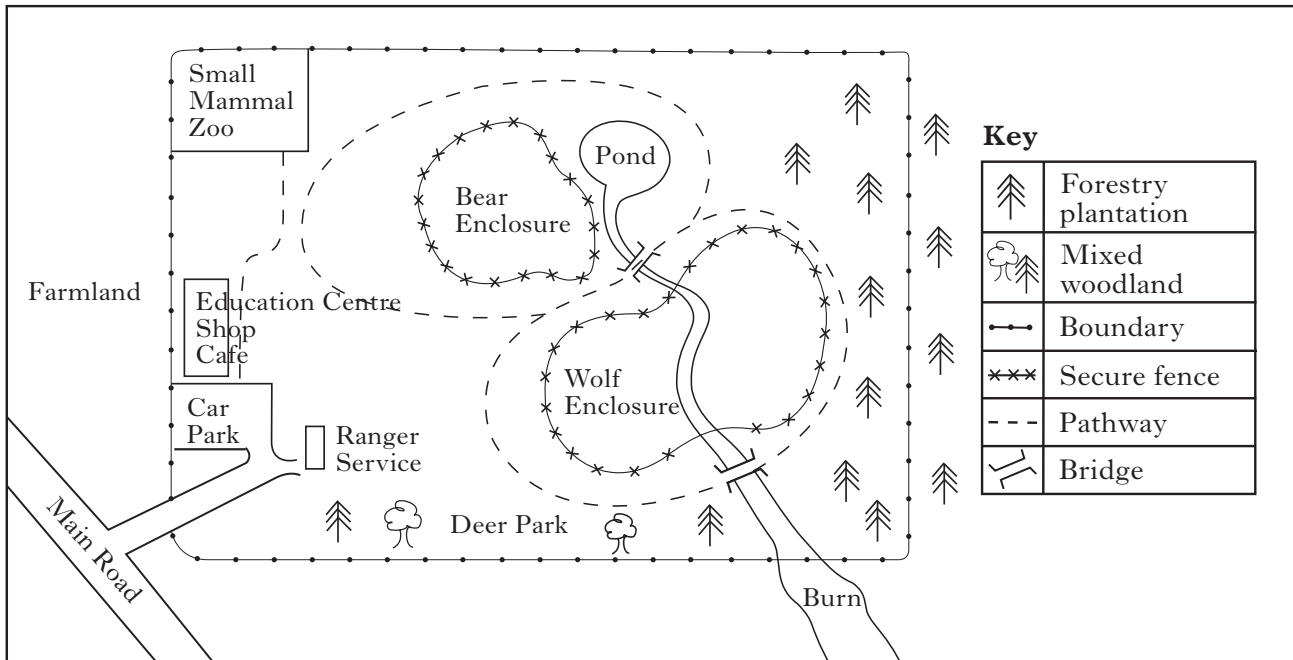
- 1 Read the whole of each question carefully before you answer it.
- 2 Write in the spaces provided.
- 3 Where boxes like this ☐ are provided, put a tick ✓ in the box beside the answer you think is correct.
- 4 Try all the questions.
- 5 Do not give up the first time you get stuck: you may be able to answer later questions.
- 6 Extra paper may be obtained from the invigilator, if required.
- 7 Before leaving the examination room you must give this book to the invigilator. If you do not, you may lose all the marks for this paper.



Marks

**Answer ALL questions in the spaces provided.**

1. (a) The sketch map below shows some of the features of a Wildlife park.



From the sketch map, answer the following questions.

- (i) Give **one** example of each of the following environments.

1 Natural \_\_\_\_\_

2 Semi-natural \_\_\_\_\_

3 Built \_\_\_\_\_

2

- (ii) Give **two** types of job opportunities available at the wildlife park as a:

1 permanent job; \_\_\_\_\_

2 seasonal job. \_\_\_\_\_

2

- (iii) Apart from job opportunities, suggest **one** other advantage of the wildlife park to the local community.

\_\_\_\_\_

1

- (iv) Suggest a former land use for the area occupied by the wildlife park.

\_\_\_\_\_

1

Marks

**1. (continued)**

(b) Wolves and bears became extinct in Scotland many years ago.

(i) What is meant by extinct?

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1

(ii) Name **one** animal in danger of extinction at the present time in:

Scotland; 

---

the world. 

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2

(c) Some plant species such as *Primula scotica*, the Scottish Primrose, are in danger of extinction.

(i) Suggest a reason why plant species become extinct.

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1

(ii) Plants in a species are counted to see if the species is in danger of extinction.

Name **one** piece of equipment used to count plants.

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1

(d) Name **one** organisation working at international level to protect endangered species.

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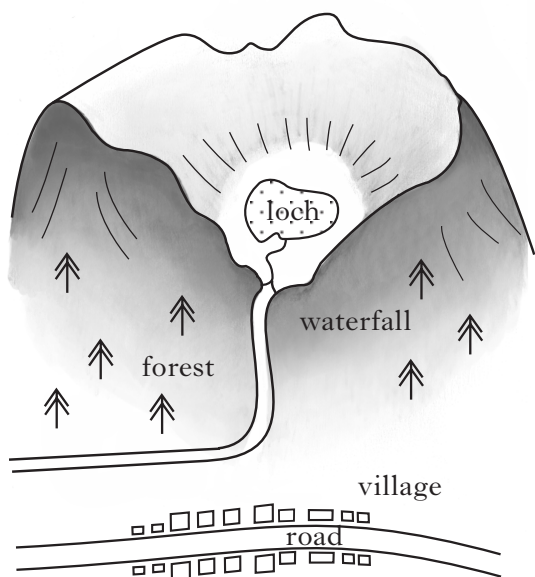
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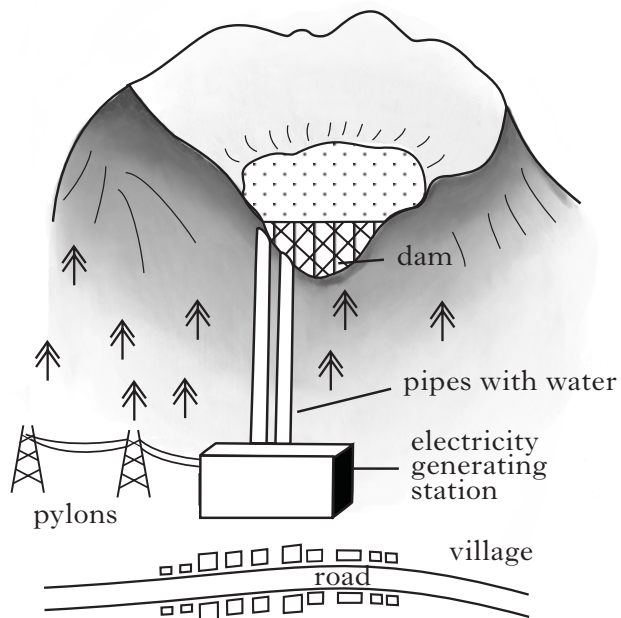
Marks

2. (a) The diagrams below show the development of a site for a small hydro-electric power (HEP) scheme.

site before development



site after development



- (i) From the diagrams, give **two** features which make this a good site for developing the HEP scheme.

1 \_\_\_\_\_

2 \_\_\_\_\_

2

- (ii) Name **two** land or water uses which would be altered by this development.

1 \_\_\_\_\_ 2 \_\_\_\_\_

2

- (iii) Suggest **one** advantage and **one** disadvantage of this development to the local community.

Advantage \_\_\_\_\_

Disadvantage \_\_\_\_\_

2

Marks

## 2. (a) (continued)

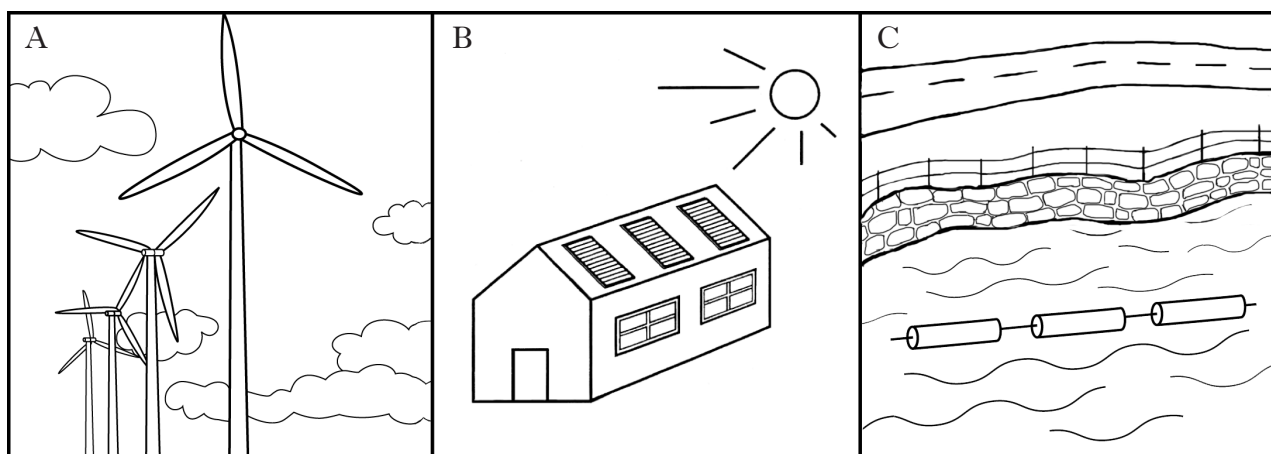
- (iv) Scotland has many HEP schemes. Give **two** reasons why Scotland's rainfall is suitable for the development of these schemes.

1 \_\_\_\_\_

2 \_\_\_\_\_

2

- (b) The pictures below show **three** ways to generate electricity. Name each renewable energy source.



A \_\_\_\_\_

B \_\_\_\_\_

C \_\_\_\_\_

3

- (c) Give **two** ways in which you personally could save electricity.

1 \_\_\_\_\_

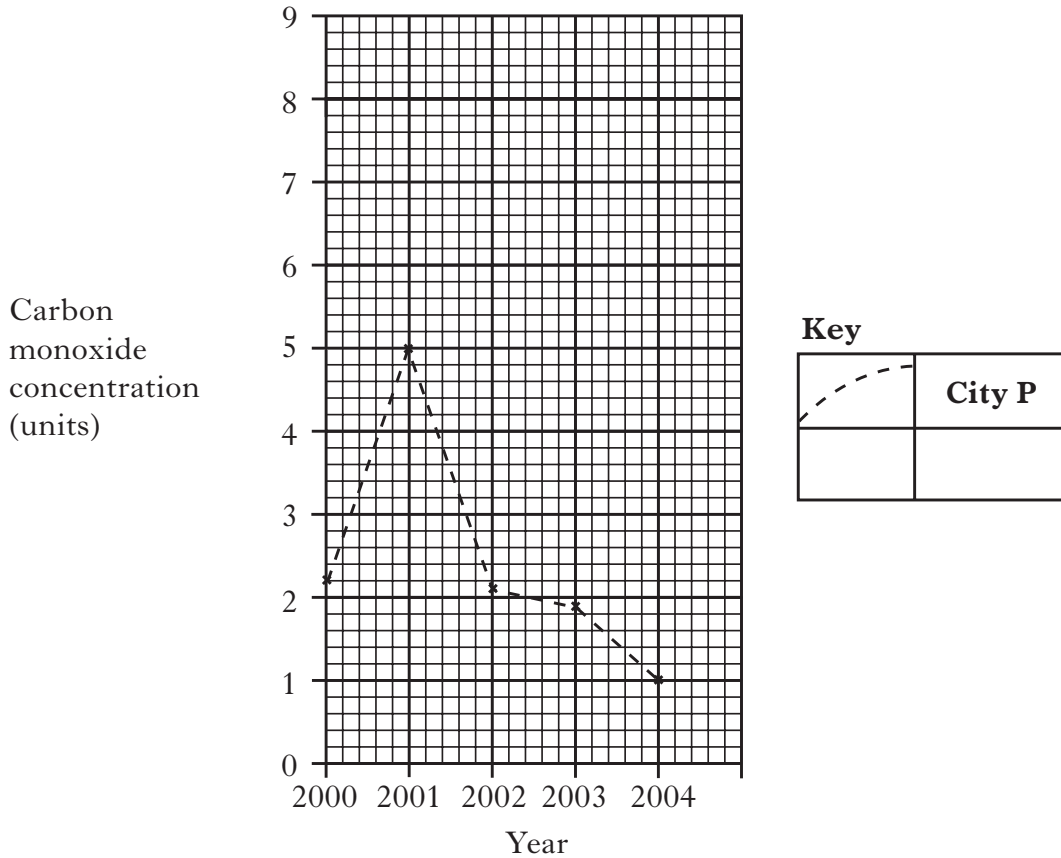
2 \_\_\_\_\_

2

[Turn over

Marks

3. (a) Carbon monoxide comes mainly from road transport sources and is an air pollutant. The graph below shows carbon monoxide concentrations (units) between 2000 and 2004 in a Scottish city (**city P**).



- (i) The table below shows the carbon monoxide concentrations for another Scottish city (**city Q**) over the same period of time.

Year	2000	2001	2002	2003	2004
Carbon monoxide concentration (units)	4.2	8.6	5.0	2.5	3.0

A Plot the carbon monoxide concentrations for **city Q** as a line on the graph above.

B Complete the key.

2

- (ii) In which year was the carbon monoxide concentration at its highest in both cities?

\_\_\_\_\_

1

Marks

## 3. (a) (continued)

- (iii) Describe the trend shown in the graph for carbon monoxide concentration in city P.

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1

- (iv) By 2003, all new cars were fitted with catalytic converters.  
What effect did this have on carbon monoxide concentrations in city P?

---

1

- (v) Predict what will happen to carbon monoxide concentration in city P in the future.

Circle your answer.

The concentration of carbon monoxide will      increase  
    decrease  
    stay the same.

Give a reason for your answer.

---

1

- (vi) Which city has the greater road transport pollution problem?

---

1

- (b) Nitrogen dioxide is another pollutant gas from road transport.

This gas can reduce levels of ozone in the atmosphere.

- (i) Give **one** effect of road transport pollution on the environment.

---

1

- (ii) Give **one** effect of reduced ozone levels on human health.

---

1

- (c) Name **one** piece of legislation at local level that helps protect the environment.

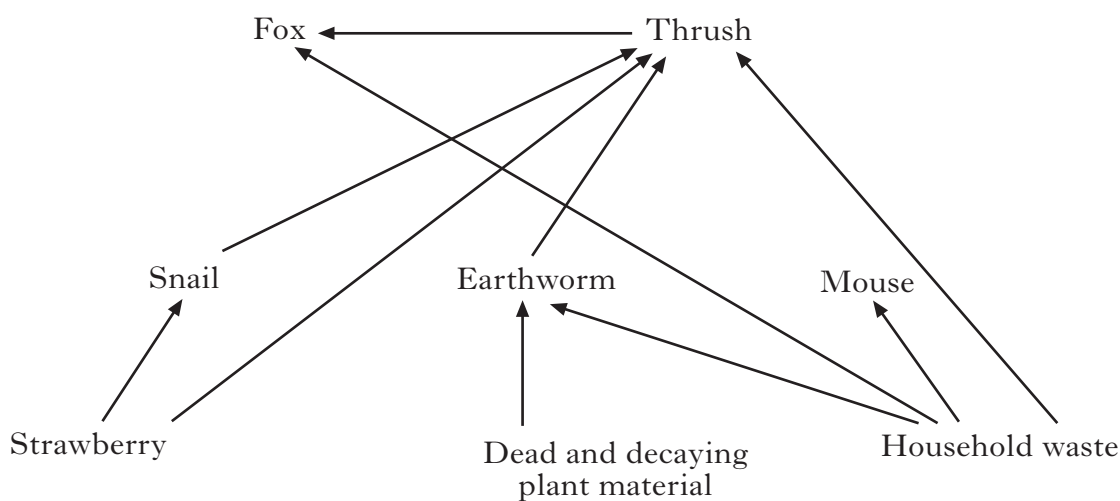
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1

[Turn over]

Marks

4. (a) The diagram below shows part of an urban food web.



From the food web:

- (i) Name the producer.

\_\_\_\_\_

1

- (ii) Complete the food chain to show the flow of energy.

	Snail	
--	-------	--

2

- (iii) Explain why the thrush in this food web is described as an omnivore.

\_\_\_\_\_  
\_\_\_\_\_

1

- (iv) What name is given to the type of organism, like the earthworm, that feeds on dead and decaying material?

\_\_\_\_\_

1



*Marks***4. (continued)**

- (b) In this food web, some household waste is being used as a source of food by living organisms.

Suggest **one** disadvantage of household waste being used in this way.

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**1**

- (c) Less household waste is now available to wildlife because of the type of disposal bins in which it is collected.

Predict the effect this will have on the number of mice.

Circle your answer.

The number of mice will      increase  
   decrease  
   stay the same.

Give a reason for your answer.

---

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**1**

- (d) Suggest **one** other way to dispose of household waste which is environmentally friendly.

---

**1**

- (e) Complete the following sentence.

The interaction between a community of organisms and their habitat is called an \_\_\_\_\_.

**1****[Turn over]**

5. Read the passage and answer the questions which follow.

## Money from old straw??

Agriculture in Scotland is no longer as profitable as it used to be. Farmers are always on the lookout for new ways to process existing crops.

Wheat is a plant grown to produce flour. The dead stems make straw. This straw may be sold at £20 per tonne for animal bedding. Unsold straw may be burned as waste.

Today, straw has other uses.



- Wax is extracted for use in making cosmetics. Wax is valued at £70 000 per tonne.
- Silica is extracted and used for water filtration. Silica is valued at £10 000 per tonne.
- Straw is converted into paper.
- Straw is broken down by bacteria to make fuel for cars.

Scottish plants such as birch, heather and pine can be processed for use in the pharmaceutical industries. These plants can be grown and processed locally. This would have financial and social benefits to the Scottish farming community. As well as these benefits, the growth of more plants native to Scotland would improve biodiversity.

- (a) Explain why farmers are looking for new ways to process their crops.

\_\_\_\_\_

1

- (b) Give **one** disadvantage to the environment of burning wheat straw.

\_\_\_\_\_

1

- (c) Name **two** industries which can make use of straw.

1 \_\_\_\_\_

2 \_\_\_\_\_

1

*Marks***5. (continued)**

- (d) Give **one** way in which processing plants locally would benefit the Scottish farming community.

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**1**

- (e) Give **one** benefit to the environment of processing plants locally.

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**1**

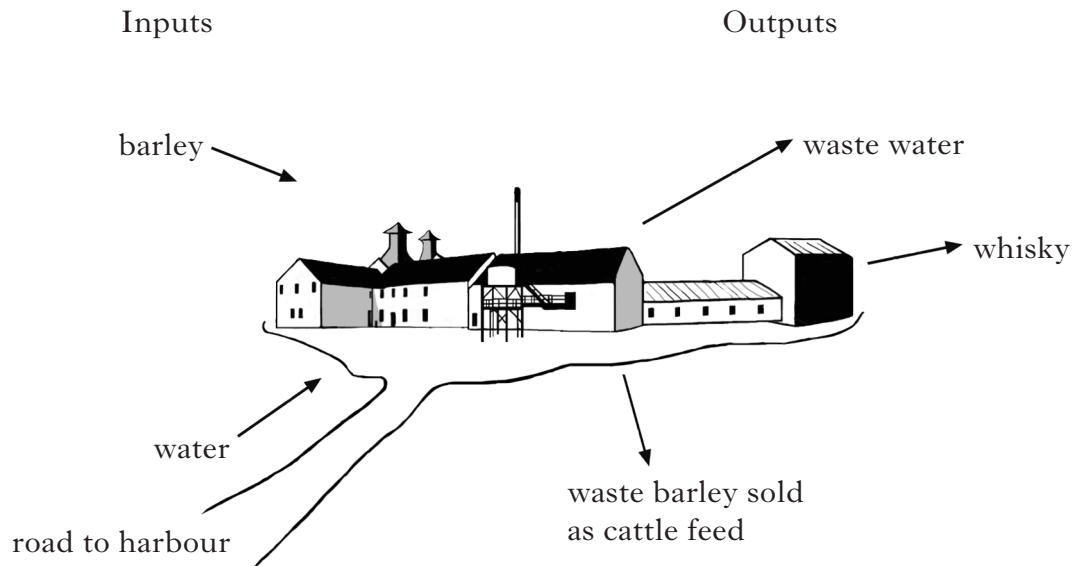
- (f) What is the source of energy for all plant crops?

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**1****[Turn over]**

Marks

6. (a) The diagram below shows part of a whisky distillery on a Scottish island.



- (i) Name **two** raw materials that the distillery requires.

1 \_\_\_\_\_ 2 \_\_\_\_\_

1

- (ii) Apart from raw materials, give **one** other physical requirement of the distillery.

\_\_\_\_\_

1

- (iii) Give **one** way in which the distillery makes use of its waste products.

\_\_\_\_\_

1

- (iv) Suggest **one** problem this island distillery has in the distribution of its whisky.

\_\_\_\_\_

1

Marks

**6. (continued)**

- (b) The distillery shop sells whisky at £25 per bottle to visitors. One week it sold 30 bottles. Calculate the total money taken for sales of whisky.

*Space for calculation*

£\_\_\_\_\_

1

- (c) Hot water is a waste product from the distillery. Freshwater pearl mussels live in the stream near the distillery. They cannot survive in temperatures above 22 °C. The distillery manages the waste water to ensure that it is cooled before entering the stream.

- (i) Name a piece of equipment which you could use to measure temperature.

\_\_\_\_\_

1

- (ii) Explain why it is essential for the waste water temperature to be measured regularly.

\_\_\_\_\_

1

- (d) Name a national organisation for protection of the environment.

\_\_\_\_\_

1

**[Turn over]**

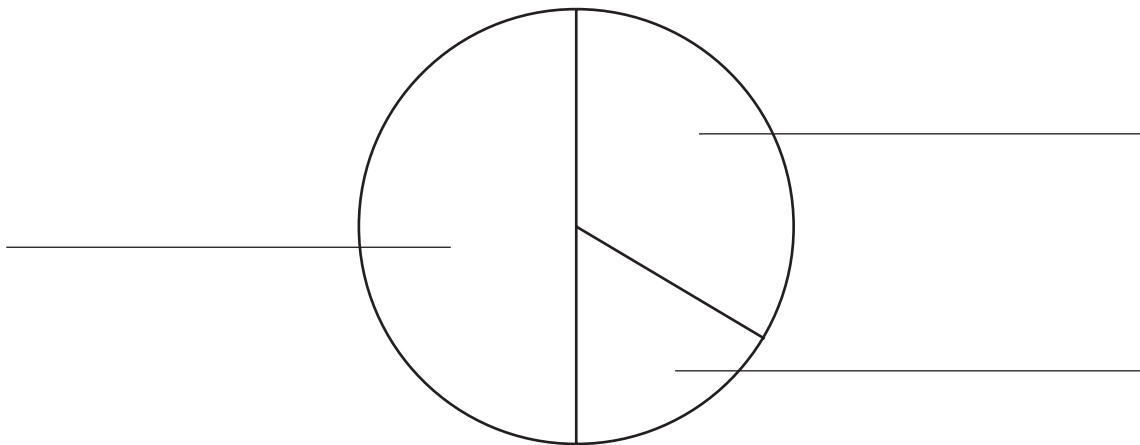
Marks

7. The table below gives information on conservation sites in Scotland.

<i>Type of conservation site</i>	<i>Area (thousand hectares)</i>
Special area of conservation (SAC)	939
SPA	626
Ramsar	313

- (a) (i) Use information in the table to label the pie chart below.  
(An additional pie chart is available on page twenty.)

Conservation sites by area



- (ii) What do the letters SPA stand for?

- (b) Give an example of conservation legislation at national level.

- (c) Give an example of a local organisation involved with conservation.

1

1

1

1

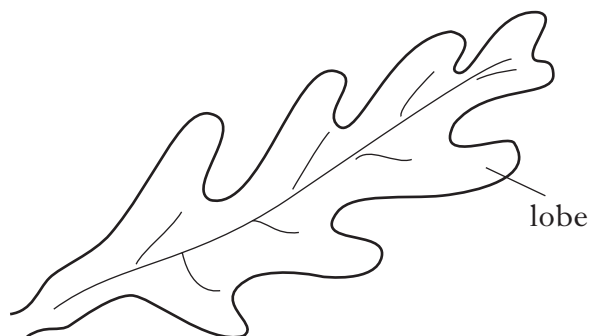
Marks

8. (a) The key below can be used to identify some species of tree which may be found in the garden.

**Key for some species of tree**

- |   |  |          |
|---|--|----------|
| 1 | Leaves lobed and prickly .....           | holly    |
|   | Leaves lobed .....                       | go to 2  |
| 2 | Leaves with pointed lobes .....          | go to 3  |
|   | Leaves with rounded lobes .....          | oak      |
| 3 | Leaves with cup at end of stalk .....    | plane    |
|   | Leaves without cup at end of stalk. .... | sycamore |

- (i) Use the key to identify the tree from which this leaf comes.



Tree \_\_\_\_\_

1

- (ii) State **two** features of a plane tree leaf.

1 \_\_\_\_\_

2 \_\_\_\_\_

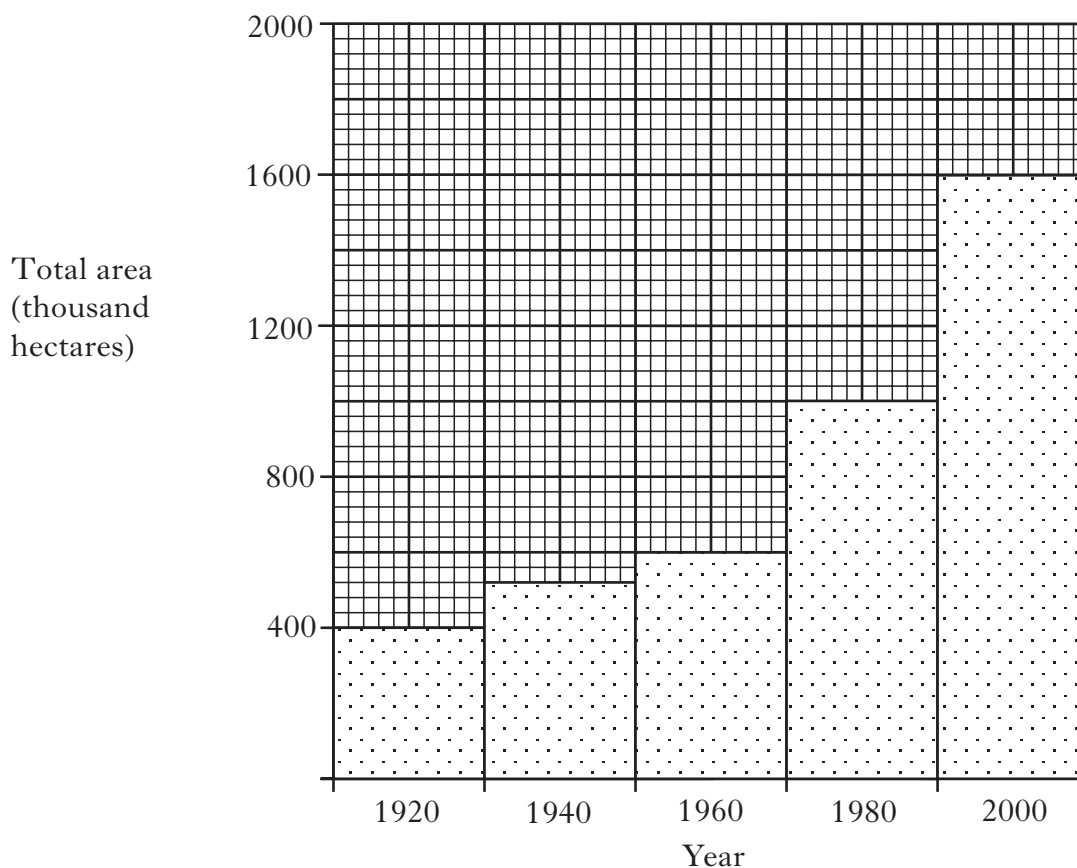
2

**[Turn over**

Marks

## 8. (continued)

- (b) The graph shows the changes in the total area of woodland (thousand hectares) in Scotland between 1920 and 2000.



- (i) Between which years did the area of woodland increase the most?

Between \_\_\_\_\_ and \_\_\_\_\_ .

1

- (ii) By how many times greater is the area of woodland in 2000 than in 1920?

*Space for calculation*

\_\_\_\_\_

1

- (c) Areas of woodland which are cut down are replanted with young trees. Suggest **one** reason for this.

\_\_\_\_\_

\_\_\_\_\_

1



*Marks*

**8. (continued)**

- (d) Some woodlands are planted with a wide variety of different trees. Predict the effect this will have on biodiversity in the woodlands and give a reason for your answer.

Circle your answer.

Biodiversity will      increase  
                                 decrease  
                                 stay the same.

**1**

Reason \_\_\_\_\_

**1**

- (e) Name an initiative relating to biodiversity at national level in Scotland.

**1**

**[Turn over**

Marks

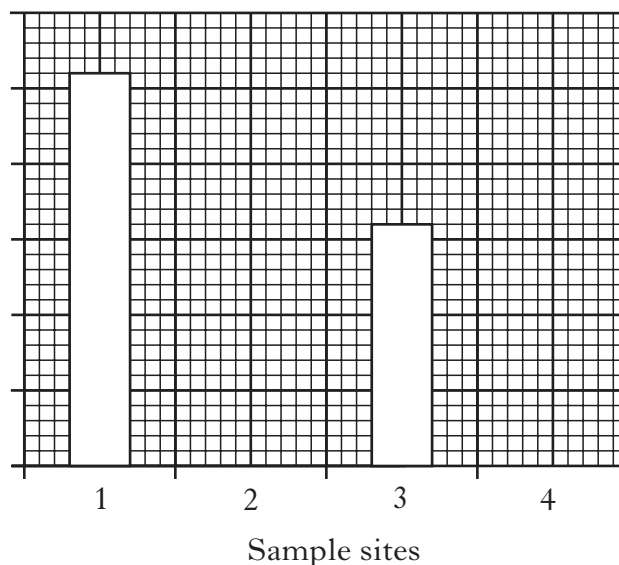
9. (a) An investigation was carried out on a river after raw sewage had accidentally entered it. Samples were taken from 4 sites and the results are shown in the table below.

	Sample site			
	1	2	3	4
Level of pollution	Very high	Medium	Low	No pollution
Oxygen (% concentration)	10	15	40	60
Type and number of animals	Rat-tailed maggot 28 Sludgeworm 24	Bloodworm 15 Rat-tailed maggot 7 Sludgeworm 18 Waterlouse 5	Bloodworm 5 Caddisfly larva 6 Shrimp 1 Waterlouse 20	Caddisfly larva 21 Mayfly nymph 15 Shrimp 8 Stonefly nymph 10

- (i) Calculate the total number of animals collected at sample site 4.  
*Space for calculation*

\_\_\_\_\_

- (ii) Complete the bar chart below by adding:  
A a scale to the vertical axis;  
B bars to the chart to show the total number of animals at sites 2 and 4.  
(An additional bar chart is available on page twenty.)



1

2

Marks

## 9. (a) (continued)

- (iii) Name **one** animal which is found at very low oxygen concentration.

---

1

- (iv) Name **one** animal which is found at the highest oxygen concentration.

---

1

- (v) Give **one** animal which indicates that there is no pollution in the river.

---

1

- (vi) Complete the following conclusion from this investigation.  
Circle your answer.

The level of pollution in a river is

indicated by the total number of animals  
the type of animals.

1

- (b) (i) Oxygen concentration was measured once at each site.  
What could be done to improve the reliability of the results?

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1

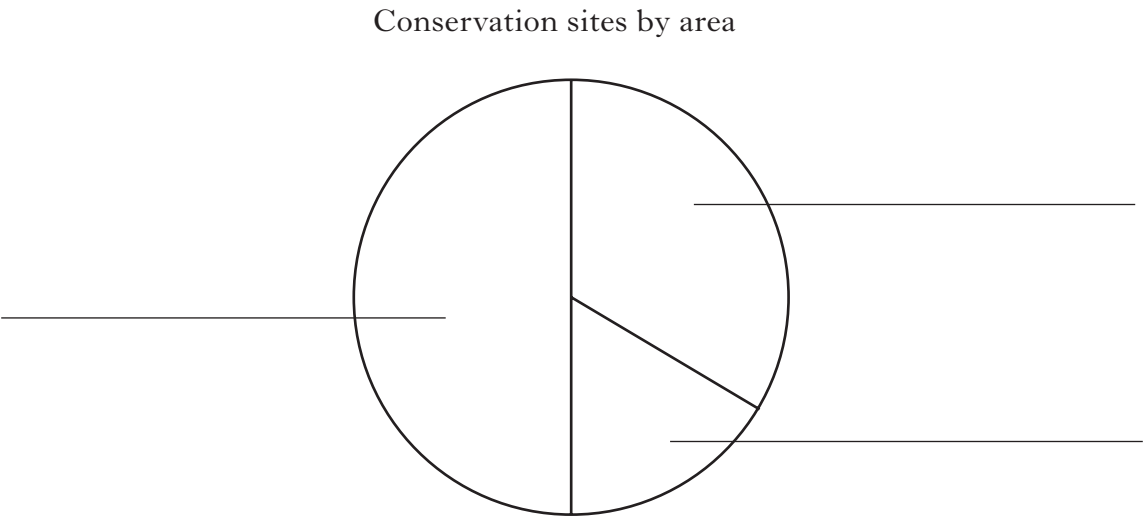
- (ii) Oxygen concentration in the water is an abiotic factor.  
Name **one** other abiotic factor.

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1

[END OF QUESTION PAPER]

**ADDITIONAL PIE CHART FOR QUESTION 7(a)(i)**



**ADDITIONAL GRAPH FOR BAR CHART FOR QUESTION 9(a)(ii)**

