FOR OFFICIAL USE

| | | | | | |
|---|---|---|---|---|---|
| | | | | | |

Total Marks

# X055/101

NATIONAL QUALIFICATIONS 2008

FRIDAY, 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

Town

Forename(s)

Surname

Date of birth
Day Month Year

Scottish candidate number

Number of seat

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.

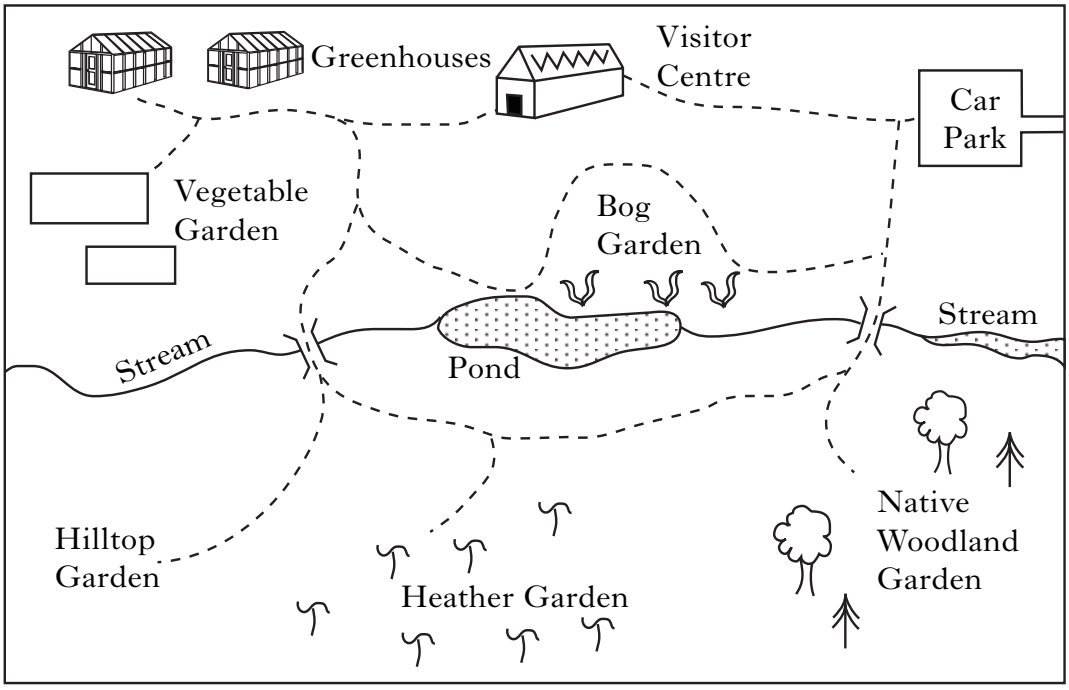
7 Before leaving the examination room you must give this book to the invigilator. If you do not, you may lose all the marks for this paper.

DO NOT WRITE IN THIS MARGIN

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

*Marks*

**1.** The diagram below shows part of a botanic garden.




Key:
- footpath
- solar panels
- bridge
- deciduous tree
- conifer tree
- heather
- bog plant
- water

(*a*) From the diagram, answer the following questions.

(i) Complete the table below.

| *Type of environment* | *Example (from the diagram)* |
|---|---|
| Natural | |
| Semi-natural | |
| Man-made | |

**2**

(ii) Two land uses of the botanic garden are for recreation and education.

Give **one** other type of land use in this garden.

_____

**1**

DO NOT WRITE IN THIS MARGIN

*Marks*

**1. (*a*) (continued)**

(iii) Give **two** types of job opportunity available at the botanic garden.

1 _____

2 _____ **1**

(iv) In which garden are red squirrels most likely to be found?

A Heather

B Hilltop

C Native woodland

D Bog

Answer _____ **1**

(*b*) Solar panels are used to provide electricity for the botanic garden.

(i) Give **one** advantage of this method to the environment.

_____ **1**

(ii) Give **one** way in which you could reduce the amount of electricity you personally use.

_____

_____ **1**

(*c*) Litter can be a problem in the botanic garden. Suggest **one** way in which this problem can be managed.

_____ **1**

(*d*) The botanic garden is an initiative to protect the environment at national level.

Give **one** example of an initiative at international level which protects the environment.

_____ **1**

**[Turn over**

DO NOT WRITE IN THIS MARGIN

*Marks*

**2.** (*a*) The calendar below shows one local authority's monthly Refuse Collection programme.

| | *Mon* | *Tues* | *Wed* | *Thur* | *Fri* | *Sat* | *Sun* |
|---|---|---|---|---|---|---|---|
| Week 1 | | | | | | 1 | 2 |
| Week 2 | △3 | 4 | 5 | 6 | 7 ☆ | 8 | 9 |
| Week 3 | 10 | 11 | ◯12 | 13 | 14 ☆ | 15 | 16 |
| Week 4 | △17 | □18 | 19 | 20 | 21 ☆ | 22 | 23 |
| Week 5 | 24 | 25 | ◯26 | 27 | 28 ☆ | 29 | 30 |

Key: Type of collection □ garden refuse ◯ glass/bottle △ paper ☆ general/household

(i) How many times per month is glass collected?

_____ **1**

(ii) Which week has the most refuse collections?

_____ **1**

(*b*) This programme is part of the local authority's Reduce, Re-use, Recycle initiative. Explain how you could reduce, re-use and recycle a **named** waste from your home.

Waste _____

Reduce _____

_____ **1**

DO NOT WRITE IN THIS MARGIN

*Marks*

**2. (*b*) (continued)**

Waste _____

Re-use _____

_____ **1**

Waste _____

Recycle _____

_____ **1**

(*c*) Give **two** advantages of recycling household waste.

1 _____

2 _____ **2**

(*d*) Garden waste is composted using decomposers. Name **one** decomposer.

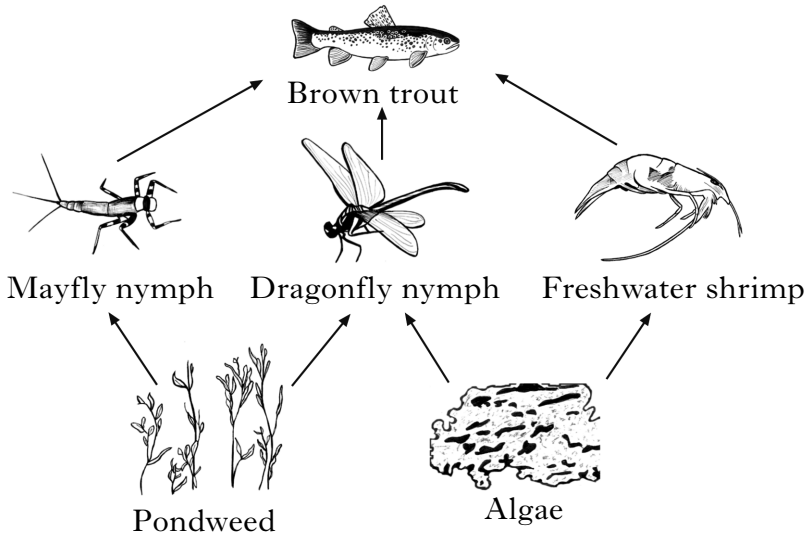
_____ **1**

**[Turn over**

DO NOT WRITE IN THIS MARGIN

*Marks*

**3.** The diagram below shows a pond food web.




(*a*) Use the diagram to answer the following questions.

(i) Name **one** carnivore.

_____ **1**

(ii) Name **two** animals which feed on plants.

1 _____

2 _____ **1**

(iii) What do the arrows represent?

_____

_____ **1**

(*b*) Name the source of energy for all food webs.

_____ **1**

DO NOT WRITE IN THIS MARGIN

**3. (continued)**

*Marks*

(*c*) Give **two** ways in which energy can be lost from a food chain.

1 _____

2 _____ **2**

(*d*) The owner of the pond turns it into a trout fishery by increasing the number of brown trout. Tick (✓) the correct box to predict what would happen to the number of freshwater shrimps.

The number of freshwater shrimps would

decrease ☐

stay the same ☐

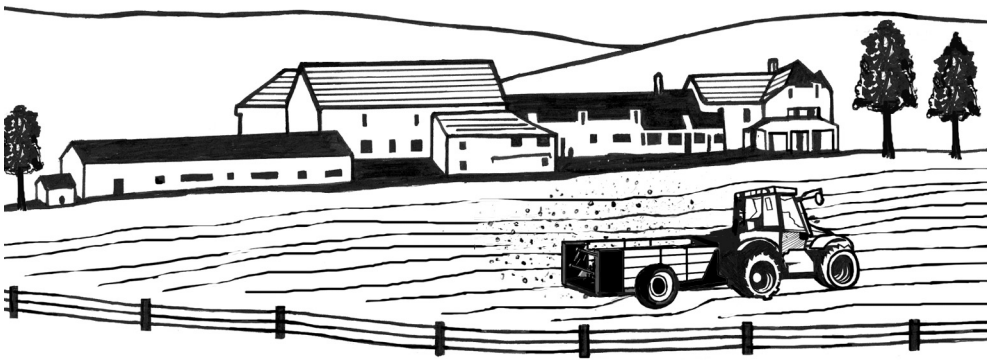
increase. ☐ **1**

**[Turn over**

DO NOT WRITE IN THIS MARGIN

*Marks*

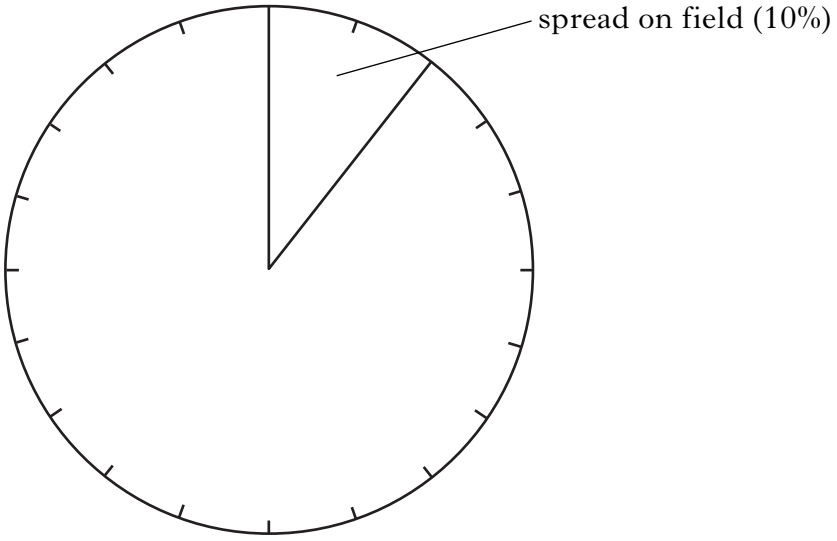
**4.** Farmyard manure is disposed of by different methods after it has been removed from farm buildings. These buildings are where some farm animals have been kept.



The table below shows the disposal method of the manure by percentage (%).

| *Disposal method* | *%* |
|---|---|
| Under cover | 5 |
| In the open, on a concrete base | 35 |
| In heaps at the edge of fields | 50 |
| Spread on the field | 10 |

(*a*) (i) Use the information in the table to complete and label the pie chart below.
(An additional pie chart is available on Page twenty-four.)




**2**

DO NOT WRITE IN THIS MARGIN

*Marks*

**4. (*a*) (continued)**

(ii) Give **one** reason why a farmer spreads manure on fields.

_____

_____ **1**

(*b*) The size of a manure heap is controlled by European Community regulations. At what level does this legislation operate? Tick (✓) the correct box.

Local ☐

National ☐

International ☐ **1**

(*c*) If a stream becomes accidentally polluted from the manure, then SEPA is the organisation which will monitor the water quality of the stream.

What do the letters SEPA stand for?

_____

_____ **1**

**[Turn over**

*Marks*

**5.** A group of students carried out an investigation to find the effect of soil moisture on the number of animal species in a field.

Pitfall traps were set up at five sites and the number of animal species caught in each site was counted.

The soil moisture (water content) was measured at each site.

The results of the investigation are shown below.

| *Site* | *1* | *2* | *3* | *4* | *5* |
|---|---|---|---|---|---|
| *Number of animal species* | 4 | 6 | 4 | 9 | 2 |
| *Soil moisture reading* | 3 | 4 | 3 | 5 | 2 |

Scale: 1 2 3 4 5 6 7 8 9 10

soil

**low** moisture **high**

(*a*) Using the results, complete the sentence below.

As the soil moisture increases, the number of animal species

_____ . **1**

(*b*) Name a piece of equipment used to measure soil moisture.

_____ **1**

(*c*) Soil moisture is an example of an abiotic factor.

Name **one** other abiotic factor.

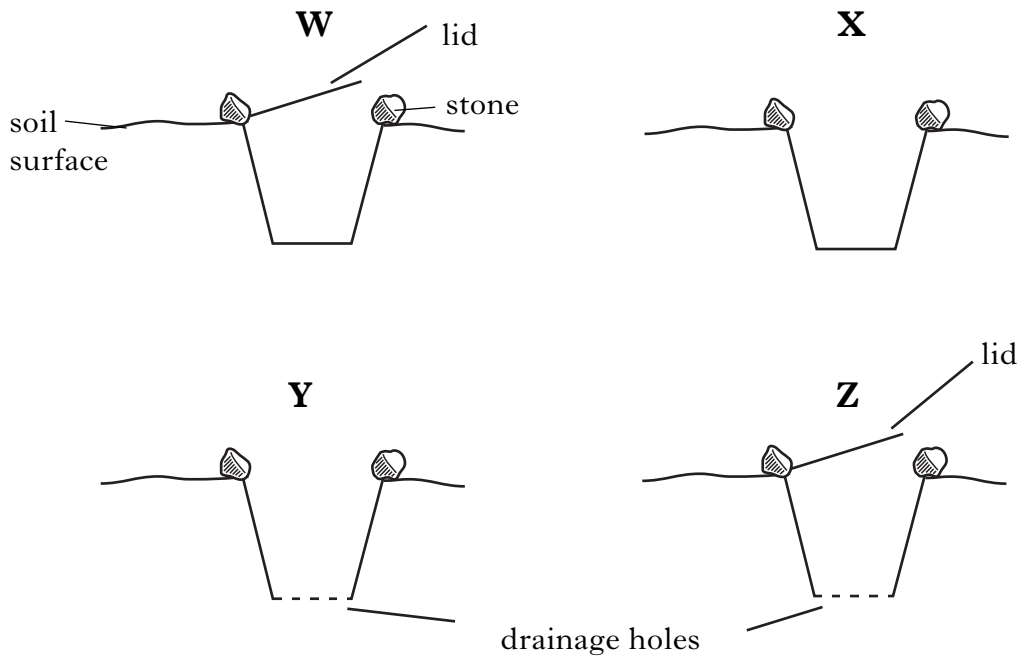
_____ **1**

DO NOT WRITE IN THIS MARGIN

*Marks*

**5. (continued)**

(*d*) The diagrams **W**, **X**, **Y** and **Z** below show four different ways a pitfall trap was set up.




Which pitfall trap has been set up correctly? _____ **1**

(*e*) Explain why it is important to return organisms to their habitat.

_____

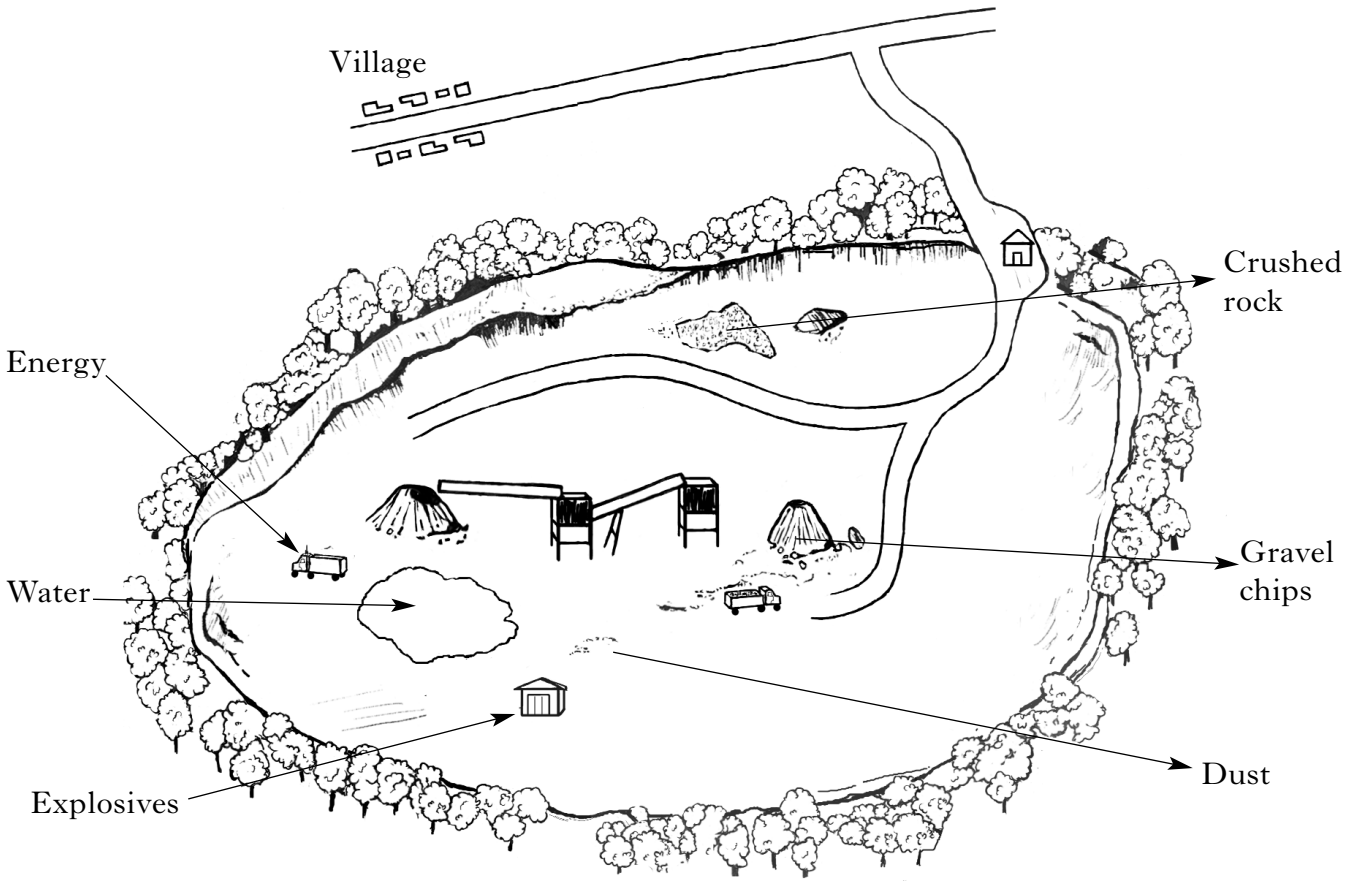
_____ **1**

**[Turn over**

DO NOT WRITE IN THIS MARGIN

*Marks*

**6.** The diagram below shows the inputs and outputs from a quarry.




(a) (i) From the diagram, name the raw material found in the quarry.

_____ **1**

(ii) The quarry uses energy. Give **two** other physical requirements of the quarry.

1 _____

2 _____ **1**

(iii) Give **one** use of the gravel chips.

_____ **1**

(iv) The quarry owners have planted trees around the quarry.

Give **one** advantage of this to the local community.

_____ **1**

DO NOT WRITE IN THIS MARGIN

*Marks*

**6. (continued)**

(*b*) Suggest **one** advantage and **one** disadvantage this quarry gives to the local community.

Advantage _____

_____ **1**

Disadvantage _____

_____ **1**

(*c*) There is a byelaw restricting the use of explosives. Tick (✓) the correct box to show at which level this legislation operates.

☐ local level

☐ national level

☐ international level **1**

(*d*) When quarrying is finished, the owners are required to redevelop the site.

Suggest **one** way the site could be developed to benefit

(i) the local community;

_____ **1**

(ii) wildlife.

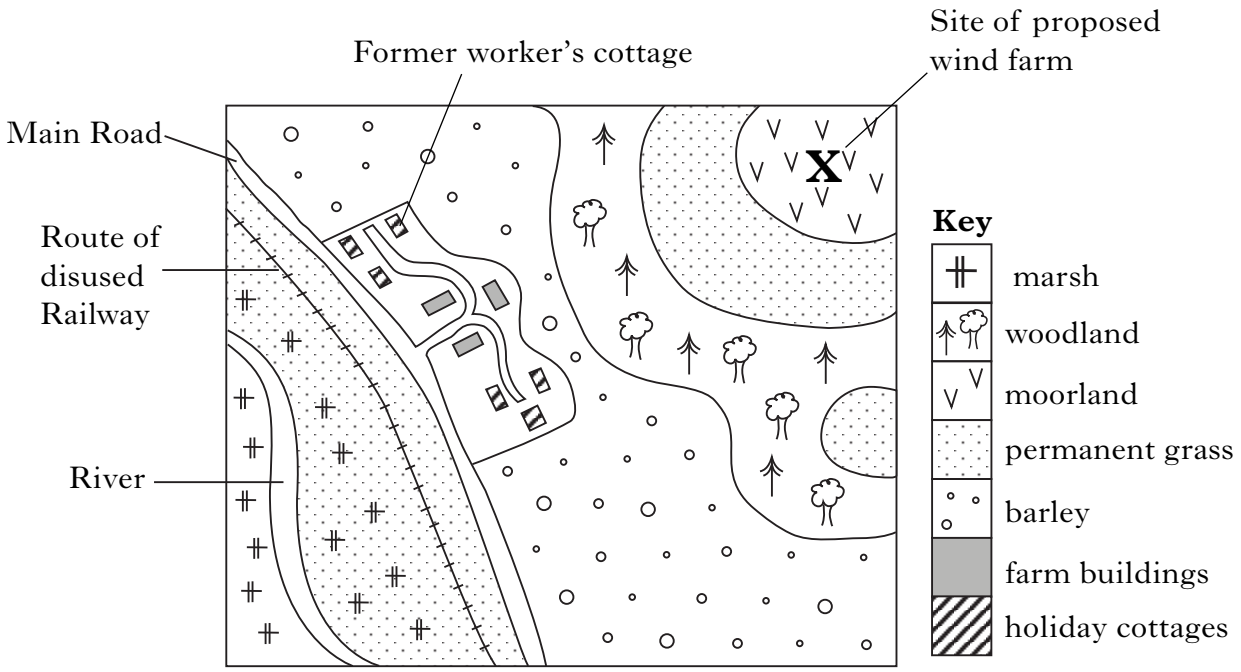
_____ **1**

**[Turn over**

DO NOT WRITE IN THIS MARGIN

*Marks*

**7.** (*a*) The diagram below shows part of an estate in Scotland.




(i) Give **one** of the main land uses of the estate.

_____ **1**

(ii) Name **one** form of transport which is no longer available through this estate.

_____ **1**

DO NOT WRITE IN THIS MARGIN

*Marks*

**7. (*a*) (continued)**

(iii) Labour requirements have decreased significantly over the past century.

1 Give **one** type of physical requirement which has increased.

_____ **1**

2 State the present-day use of what were the estate workers' cottages.

_____ **1**

(iv) Suggest **one** reason why there are no buildings near the river.

_____

_____ **1**

(*b*) There is a proposal to build 24 turbines in area **X** on the diagram.

(i) Suggest **one** reason why planning permission must be obtained.

_____

_____ **1**

(ii) Which climatic factor must be present for these turbines to operate?

_____ **1**

(iii) Suggest **one** temporary job which would be available if planning were approved.

_____ **1**

(iv) Give **one** possible negative impact of these turbines.

_____ **1**

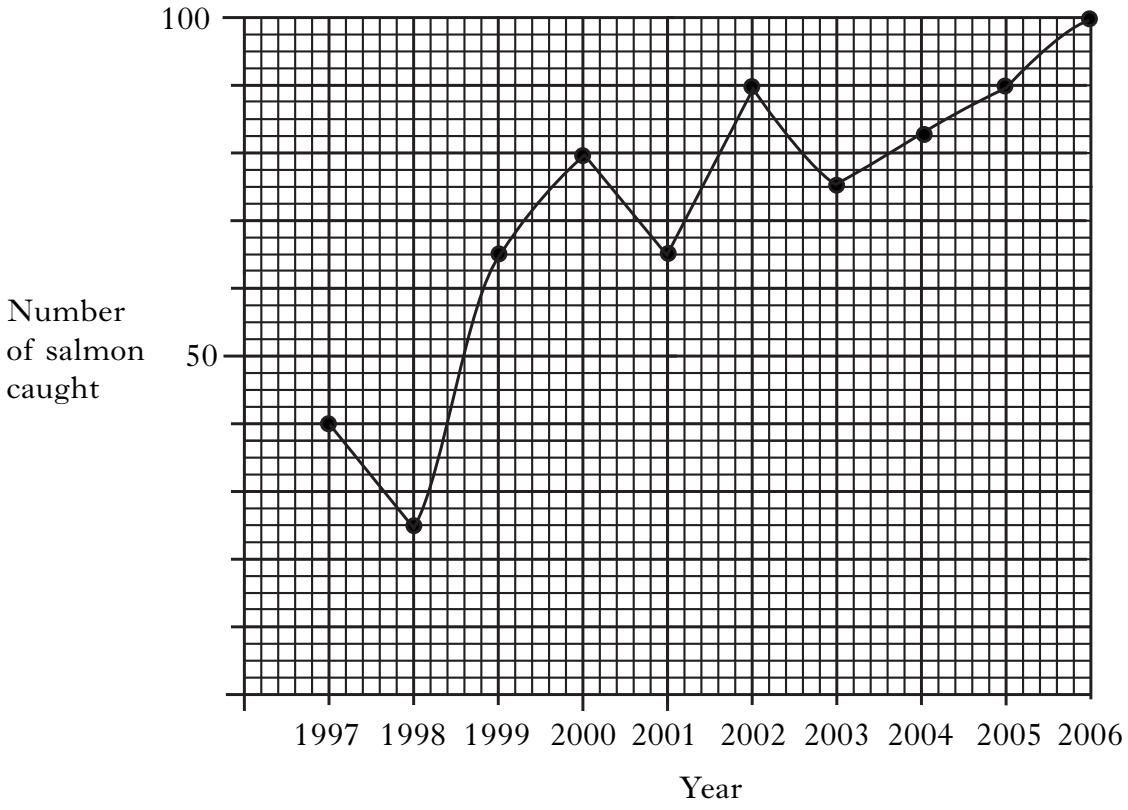
**[Turn over**

DO NOT WRITE IN THIS MARGIN

*Marks*

**7. (continued)**

(*c*) The graph shows the number of salmon caught in the river between 1997 and 2006.




(i) How many salmon were caught in 2000?

_____ **1**

(ii) What is the overall trend in numbers of salmon caught between 1997 and 2006?

_____ **1**

(*d*) Give **one** advantage to the estate of renting out parts of the river to anglers.

_____ **1**

(*e*) The river on the estate is classified as an SSSI. Name **one** other type of protected area.

_____ **1**

DO NOT WRITE IN THIS MARGIN

*Marks*

**7. (continued)**

(*f*) The estate has 50 units which qualify for the Single Farm Payment Entitlement (SFPE).

Calculate the total payable when each unit receives 330 euros(€).

*Space for calculation*

_____ euros **1**

**[Turn over**

DO NOT WRITE IN THIS MARGIN

*Marks*

**8.** Read the passage and answer the questions that follow.

## The Caledonian Forest

Glen Affric is a National Nature Reserve which contains a large part of the remaining Caledonian Forest.

The Caledonian Forest is unique because it has only one species of conifer tree, the Scots pine. It also has a wide variety of broad leaved trees including birches. This native forest used to cover the Highlands of Scotland. However, after hundreds of years of exploitation, only 1% of the forest survives. Large mammals such as beaver, lynx and brown bear have become extinct in Scotland.

Both the Forestry Commission and Trees for Life have been involved with the restoration of the Caledonian Forest. They have planted young Scots pines and built fences to keep out grazing sheep and deer.

As the forest matures, the range of habitats increases. Many birds are found in this forest. The chaffinch is the most common bird. It feeds on seeds and insects.

(*a*) (i) Why is the Caledonian Forest unique?

_____ **1**

(ii) Calculate the percentage of the Caledonian Forest which has been destroyed.

*Space for calculation*

_____ % **1**

(iii) Suggest **one** reason why the beaver, lynx and brown bear became extinct in Scotland.

_____ **1**

DO NOT WRITE IN THIS MARGIN

*Marks*

**8. (*a*) (continued)**

(iv) Give **one** renewable resource used by the Forestry Commission and Trees for Life.

_____ **1**

(v) Give **one** reason why sheep and deer are kept out of the forest.

_____ **1**

(vi) Predict the effect on biodiversity as the forest matures.
Tick (✓) the correct box.

| | | |
|---|---|---|
| Biodiversity will | increase | ☐ |
| | stay the same | ☐ |
| | decrease. | ☐ **1** |

(vii) What type of feeding is shown by the chaffinch?

_____ **1**

(*b*) (i) The Forestry Commission and Trees for Life are organisations at a national level.

Name **one** organisation at an international level for protection of the environment.

_____ **1**

(ii) When trees are cut down, the timber has many uses.

Give **two** uses of timber.

1 _____

2 _____ **1**

(iii) The chaffinch is not endangered.

Name **one** bird species in Scottish native woodland that is endangered.

_____ **1**

**[Turn over**

DO NOT WRITE IN THIS MARGIN

*Marks*

**8. (*b*) (continued)**

(iv) Name **one** plant species that faces extinction in Scotland.

_____ **1**

(*c*) Choose from the words below to complete the sentence.

*community* *consumer* *habitat* *population* *producer*

An ecosystem is made up from the _____ and the

_____. **1**

DO NOT WRITE IN THIS MARGIN

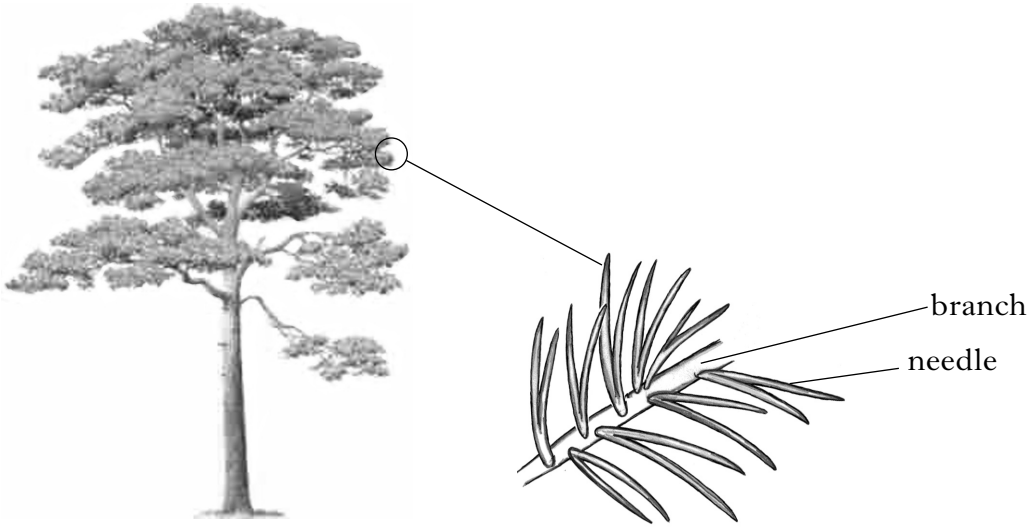
*Marks*

**9.** The key below uses some features of trees found in Scottish forests.

**Key of some forest trees**

| | | |
|---|---|---|
| 1 | Needles found in pairs | go to 2 |
| | Needles found singly | go to 3 |
| 2 | Needles opposite on branch | Lodgepole Pine |
| | Needles spiralled round branch | Scots Pine |
| 3 | Needles spiralled around branch | Norway Spruce |
| | Needles not spiralled | go to 4 |
| 4 | Needles with two grey bands underneath | Dunkeld Larch |
| | Needles four-sided and spiked at tip | Sitka Spruce |

(*a*) Use the key to identify the tree, part of which is drawn below.




Name _____ **1**

(*b*) Give **one** similarity and **one** difference between the Norway Spruce and the Sitka Spruce.

Similarity _____ **1**

Difference _____

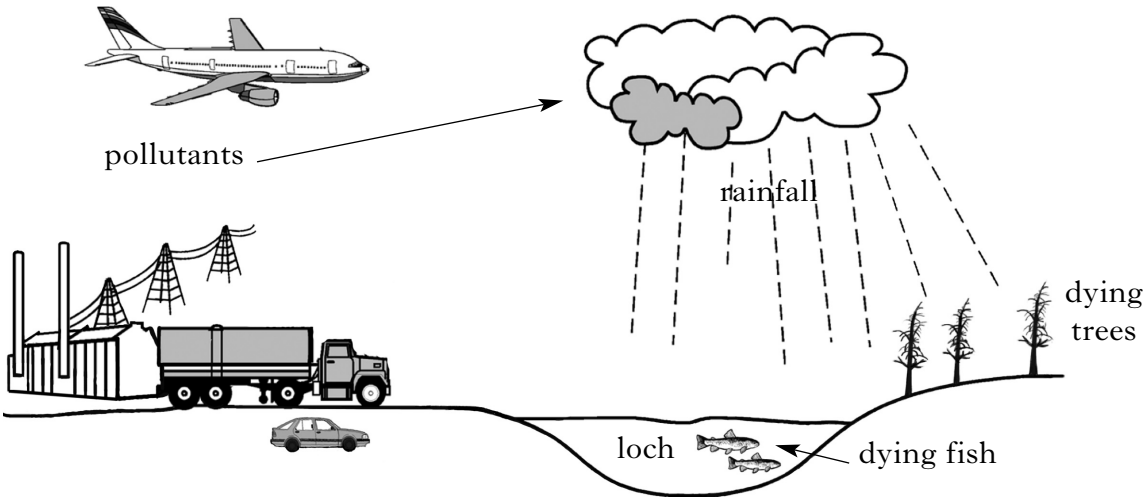
_____ **1**

**[Turn over**

DO NOT WRITE IN THIS MARGIN

*Marks*

**10.** Acid Rain is caused by pollutants in the atmosphere dissolving in rain clouds.




(*a*) (i) From the diagram, give **two** examples of human activity which contribute to acid rain.

1 _____

2 _____ **1**

(ii) Suggest **one** way to reduce the emissions which cause acid rain.

_____ **1**

(iii) Acid rain can result in the death of wildlife. Give **one** other effect of acid rain.

_____ **1**

(*b*) Pupils carried out an investigation into the acidity of rainwater. They collected samples of rainwater on each of five days and measured its pH.

The results are shown in the table below.

| *Day* | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| *pH* | 6·5 | 7·0 | 5·0 | 5·5 | 6·0 |

DO NOT WRITE IN THIS MARGIN

**10. (*b*) (continued)**

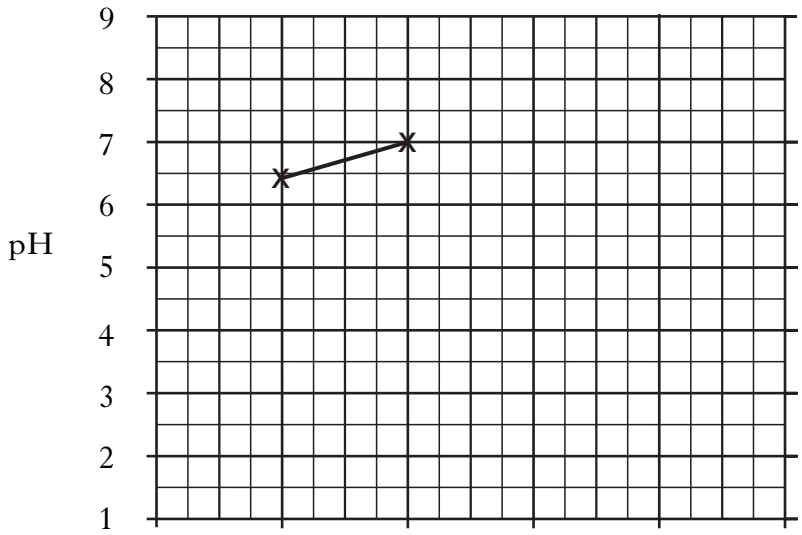
*Marks*

(i) Using the information in the table, complete the line graph below by adding

1 a label and scale to the horizontal axis; and

2 the pH results for days 3, 4 and 5.

(An additional line graph is available on Page twenty-four.)




**2**

(ii) On which day was the rain most acidic?

_____

**1**

(iii) Name a piece of equipment used to measure pH and describe how you would use it.

Equipment

_____

**1**

Description

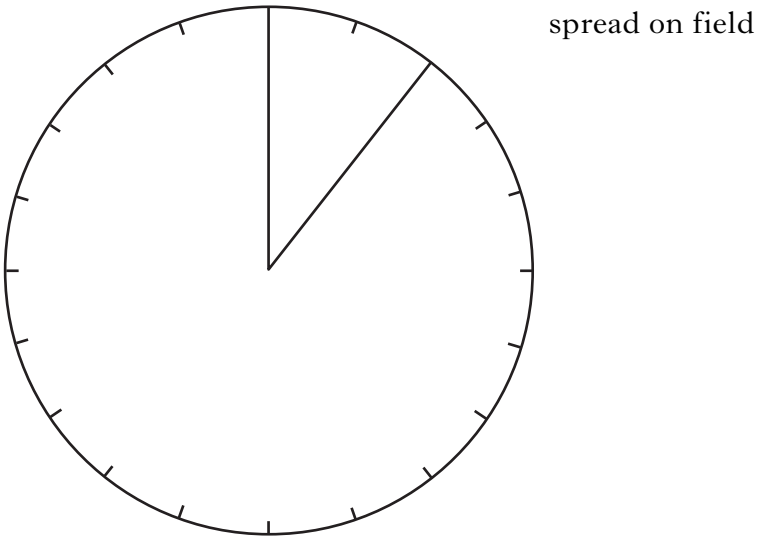
_____

_____

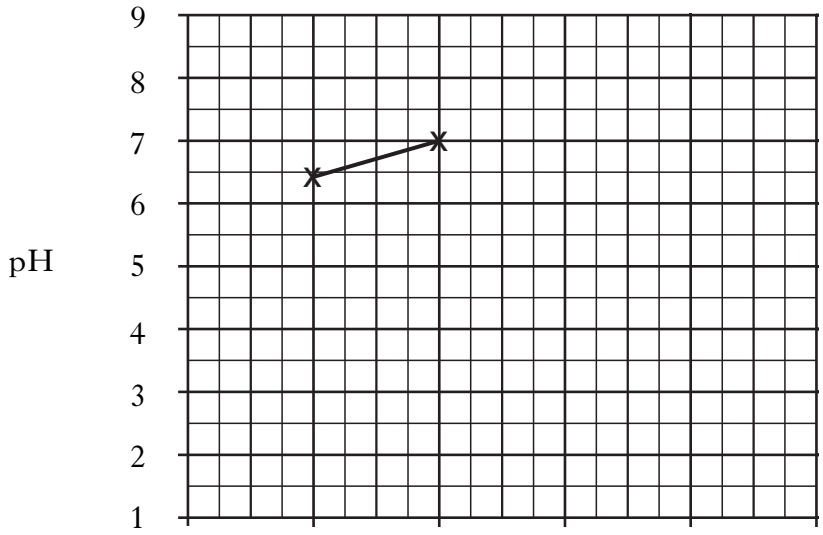
**1**

[*END OF QUESTION PAPER*]

**ADDITIONAL PIE CHART FOR QUESTION 4 (a) (i)**




**ADDITIONAL LINE GRAPH FOR QUESTION 10 (b) (i)**



ACKNOWLEDGEMENTS

Question 8—Picture and text taken from *The Caledonian Forest* from www.treesforlife.org.uk. Reproduced by permission of Trees for Life, Forest Light.