FOR OFFICIAL USE

Total Marks

X055/10/01

NATIONAL QUALIFICATIONS 2013

FRIDAY, 7 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.

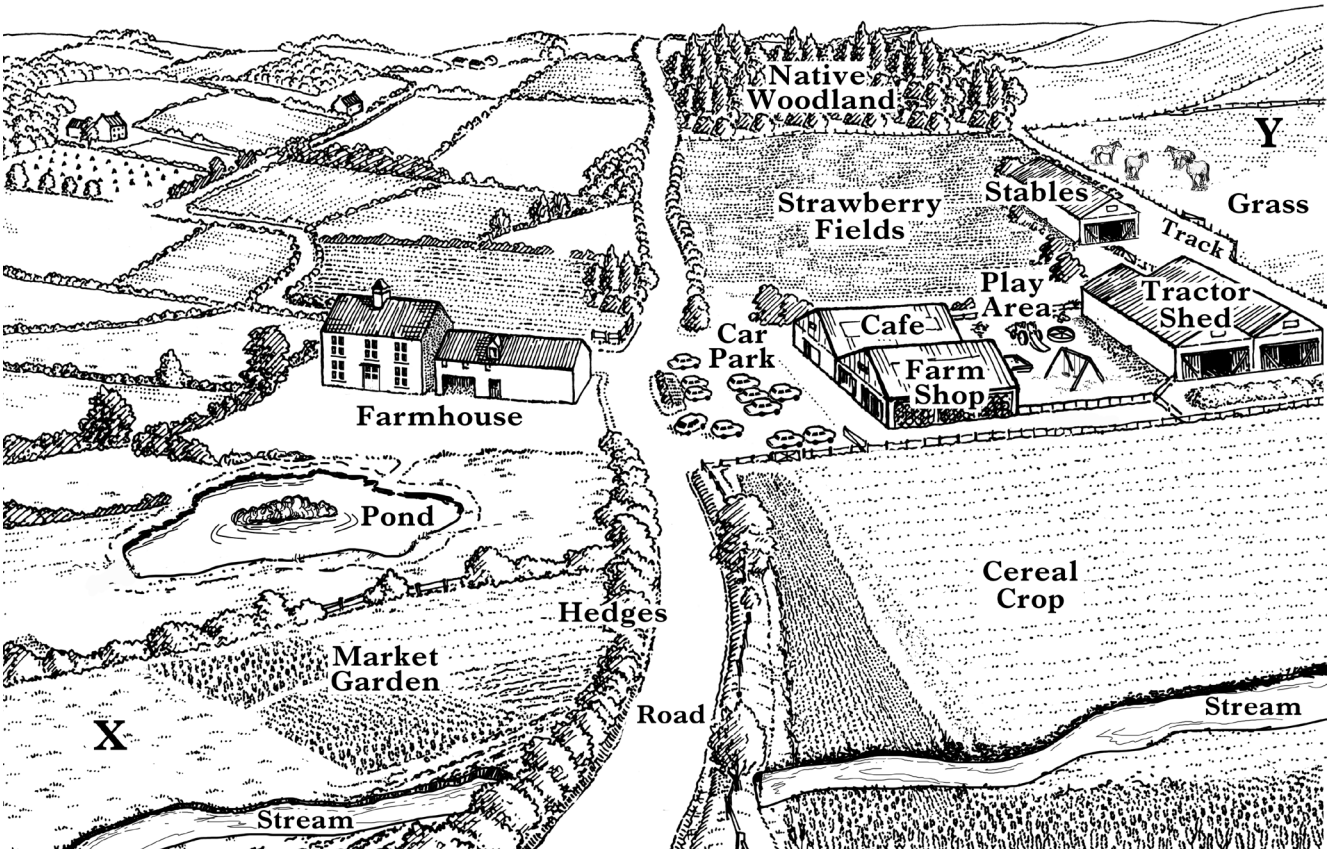
5 Do not give up the first time you get stuck; you may be able to answer later questions.

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.

Marks

1. The diagram below shows part of a farm.



Key

X } Possible sites
Y } for muck heap

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

(i) Complete the table.

Type of environment	*Example from diagram*
	Native woodland
Semi-natural	
	Tractor shed

2

(ii) Agriculture is a type of land use.

Name **one** other type of land use shown on the farm.

_____

1

(iii) Give **one** product from the farm.

_____

1

Marks

1. (*a*) (continued)

(iv) There are many job opportunities on the farm.

Give an example of a job on the farm which is

Seasonal _____ **1**

Permanent _____ **1**

(v) Suggest why the farmer has branched out or diversified from traditional agricultural activities into a variety of others.

_____ **1**

(vi) The farmer puts waste from the stables in a muck heap.

Where do you think this should be located?

Circle your answer.

X **Y**

Give a reason for your choice.

_____ **1**

(*b*) The farm is part of an Environmentally Sensitive Areas (ESA) scheme.

Name **one** other scheme to improve the environment for wildlife on the farm.

_____ **1**

(*c*) Water voles have been seen in the stream.

Name **one** other endangered species found in Scottish wetland.

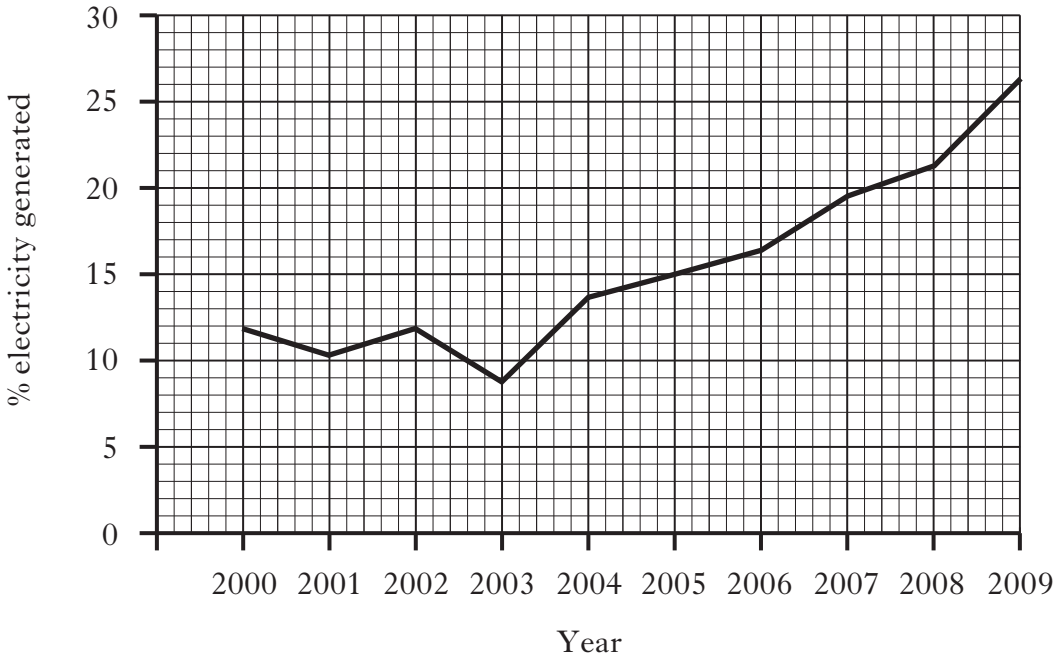
_____ **1**

[Turn over

DO NOT WRITE IN THIS MARGIN

Marks

2. (*a*) The graph below shows the percentage (%) of electricity generated by renewable energy sources in Scotland between 2000 and 2009.



(i) What percentage of electricity came from renewable energy sources in 2005?

_____ % **1**

(ii) Describe the trend in electricity generated by renewables between 2000 and 2009.

_____ **1**

(iii) What is meant by a renewable energy source?

_____

_____ **1**

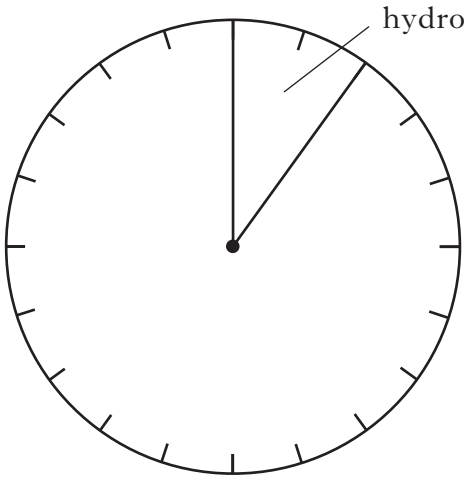
Marks

2. (continued)

(*b*) The table below gives the percentage (%) of energy from each source.

Energy Source	*Percentage* (%)
Hydro	10
Wind	10
Biogas	2
Wave	3
Other renewables	5
Non-renewables	70

(i) Use the information from the table to complete the pie chart below.
(An additional pie chart is available on *Page twenty-three*)



2

(ii) Name **one** other renewable source of energy.

_____ **1**

(iii) Choose **one** renewable source of energy and give **one** advantage and **one** disadvantage of using this source to produce electricity.

Renewable energy source _____

Advantage _____

_____ **1**

Disadvantage _____

_____ **1**

Marks

2. (continued)

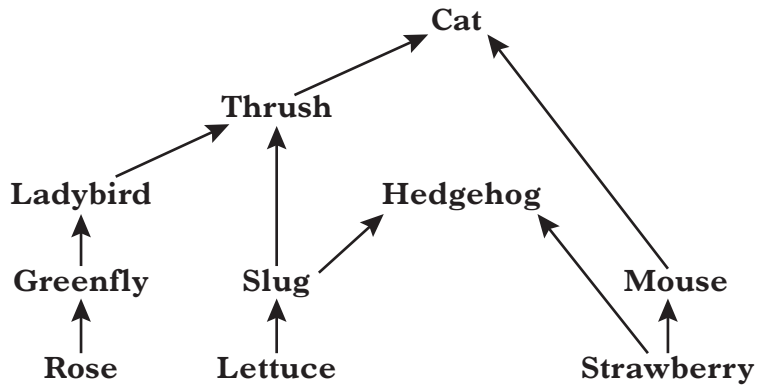
(*c*) Underline the correct options to complete the following paragraph.

When coal is burned in a coal-fired power station the gas {*ozone* / *sulphur dioxide*} may be produced.

This gas can combine with the {*moisture* / *air*} in the atmosphere to produce {*acid rain* / *UV radiation*}. **2**

Marks

3. The diagram below shows part of a food web from a garden.



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

(i) Complete the food chain.

	Slug	→		

2

(ii) Explain why the hedgehog in this food web is described as an omnivore.

_____

_____ **1**

(iii) Predict what would happen to the number of ladybirds if the cat had kittens. Give a reason for your answer.

Tick (✓) the correct box.

The number of ladybirds would

increase ☐

decrease ☐

stay the same ☐

Reason: _____

_____

_____ **1**

Marks

3. (*a*) (continued)

(iv) Name the source of energy in this and all food webs.

_____ **1**

(v) What do the arrows in the diagram represent?

_____ **1**

(*b*) Hedgehog numbers are decreasing in Scotland.

Suggest a reason why.

_____ **1**

(*c*) Which of the following plant species is in danger of extinction in Scotland?

Circle your answer.

A. Scottish bluebell

B. Scottish primrose

C. Scots pine

D. Heather **1**

Marks

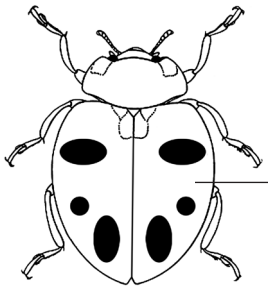
3. (continued)

(*d*) Ladybirds can be identified by their colour and the number and arrangement of spots. The key below was made by students and used to identify some species of ladybirds.

1	Body colour red	go to 2
	Body colour black	go to 3
2	14 spots on back	**Bryony ladybird**
	Less than 14 spots on back	**Adonis ladybird**
3	Spots arranged in one straight line	go to 4
	Spots not arranged in one straight line	**Pine ladybird**
4	6 spots across the back	**Heather ladybird**
	2 spots across the back	**Kidney spot ladybird**

Use the key above to

(i) identify the following ladybird



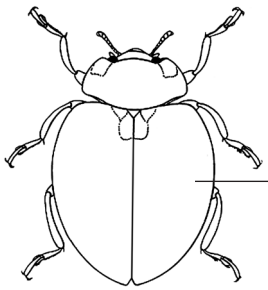
body colour red

Name _____ **1**

(ii) complete the following diagram of the **Heather ladybird** by adding the:

1 **label** for the body colour; **1**

2 **arrangement** and **number** of the spots. **1**



body colour

(*e*) Suggest **one** way to encourage wildlife into a garden.

_____ **1**

Marks

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

Slip Ups on Ben Nevis

Ben Nevis, Scotland's highest mountain, is very popular with walkers, mountain bikers and mountaineers. This heavy recreational use has caused problems such as erosion and litter. Plastic bottles, drink cans and food wrappers are part of this litter. A recent litter collection on Ben Nevis revealed that 55% of the litter collected consisted of banana skins and 15% consisted of plastic bottles. The remainder consisted of drink cans and food wrappers. People eat bananas to get an energy boost, then leave the skins behind believing that these will break down. The banana skins will take up to two years to rot on Ben Nevis in the very cold temperatures there. Apple cores will rot down much more quickly.

(*a*) (i) Name **two** leisure activities which take place on Ben Nevis.

1 _____

2 _____ **1**

(ii) Choose **one** of the environmental impacts caused by recreational use and suggest a solution to this problem.

Impact _____

Solution _____

_____ **1**

Marks

4. (*a*) (continued)

(iii) Name **one** type of organism which breaks down banana skins.

_____ **1**

(*b*) The table below shows the average time taken for some litter items to break down.

Item	*Average time taken to break down*
Aluminium can	100 years
Apple core	8 weeks
Cardboard	2 months
Cigarette end	1–5 years
Glass bottle	Indefinitely
Orange peel	Up to 2 years
Plastic bottle	Indefinitely
Plastic bag	10–20 years

How many items will take less than 30 years to break down?

_____ **1**

(*c*) Suggest **two** ways in which recycling could be encouraged.

1 _____ **1**

2 _____ **1**

(*d*) There is a bye-law which discourages litter dropping.

(Circle) the level at which this operates.

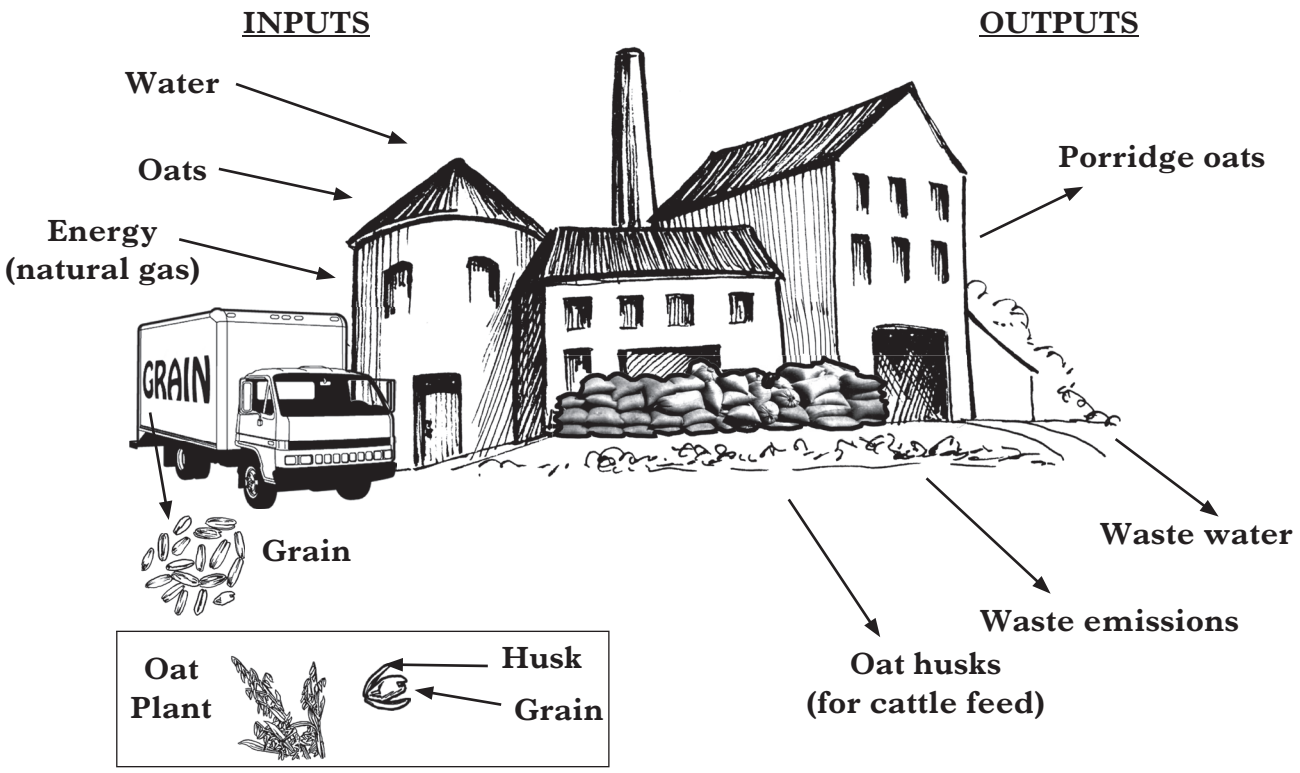
Local *National* *International* **1**

[Turn over

Marks

5. (*a*) Oats is a cereal crop grown in Scotland. Each oat grain is surrounded by a protective husk. Oats can be processed at a mill to produce porridge oats.

The diagram below shows some of the inputs and outputs at a mill.



(i) Name **one** raw material required at the mill.

_____ **1**

(ii) Name **one** other physical requirement at the mill.

_____ **1**

(iii) Give **one** labour requirement at the mill.

_____ **1**

(iv) Name **two** products from the mill which can be sold.

1 _____

2 _____ **1**

Marks

5. (continued)

(*b*) The mill owners are planning to use the oat husks as the fuel to supply all the heat energy required at the mill. Give **one** advantage of this change from natural gas to oat husks to:

1 the mill owners; _____

_____ **1**

2 the environment. _____

_____ **1**

(*c*) Name the organisation which monitors the waste water and emissions from the mill.

_____ **1**

(*d*) Some scientists think that rising levels of carbon dioxide lead to an increase in temperatures world wide.

(i) State the term used to describe this environmental effect.

_____ **1**

(ii) Describe **one** effect on the environment of this increase in temperature.

_____

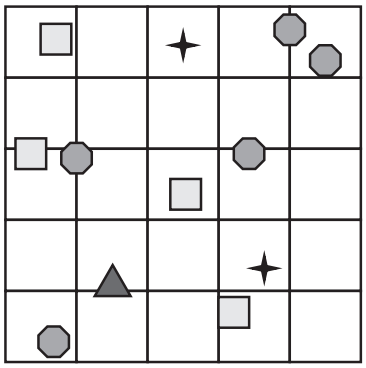
_____ **1**

[Turn over

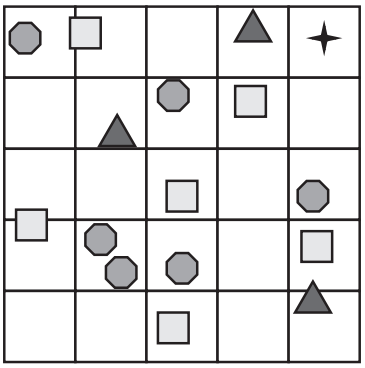
Marks

6. (*a*) Students carried out an investigation into the numbers of some plants in a park. The results were noted on a record sheet as shown below.

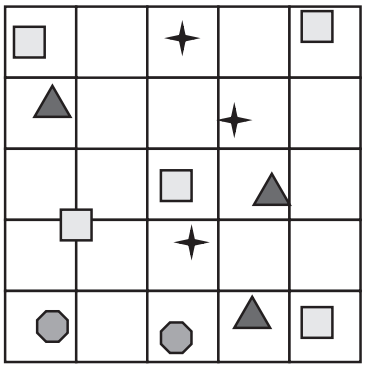
Quadrat A



Quadrat B



Quadrat C



Daisy Buttercup Plantain Dandelion

(i) Complete the results table below, using information from the record sheet.

Plant type	*Number of plants Quadrat A*	*Number of plants Quadrat B*	*Number of plants Quadrat C*
Daisy	4	6	5
Buttercup	5	6	2
Plantain	2	1	3
Dandelion	1	3	

1

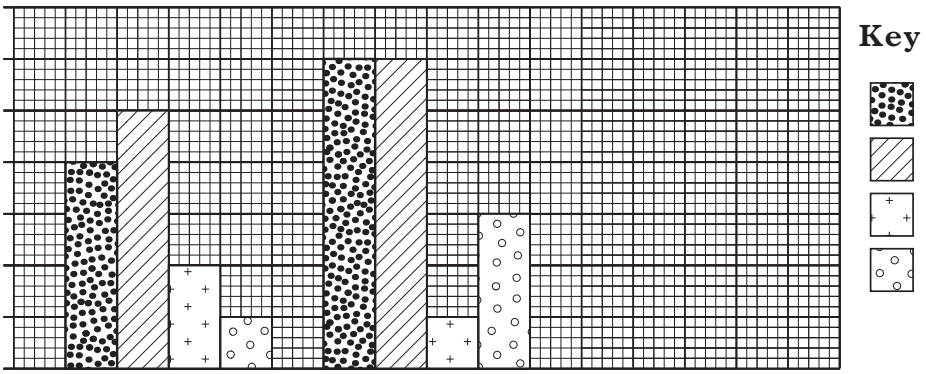
Marks

6. (*a*) (continued)

(ii) Use the results in the table to complete the bar graph below by adding

1 a label and scale to the y (vertical) axis;
2 a key;
3 the bars for Quadrat C.

(An additional bar graph is available on *Page twenty-three*)



Quadrat A Quadrat B Quadrat C **3**

(iii) Which plant type is the least abundant?

_____ **1**

(iv) Give **one** way in which this investigation could be improved.

_____ **1**

(*b*) (i) Name **one** abiotic factor which could affect the distribution of plants, and describe how you would measure it.

Abiotic factor _____ **1**

Equipment _____ **1**

Method _____

_____ **1**

(ii) Name **one** other abiotic factor.

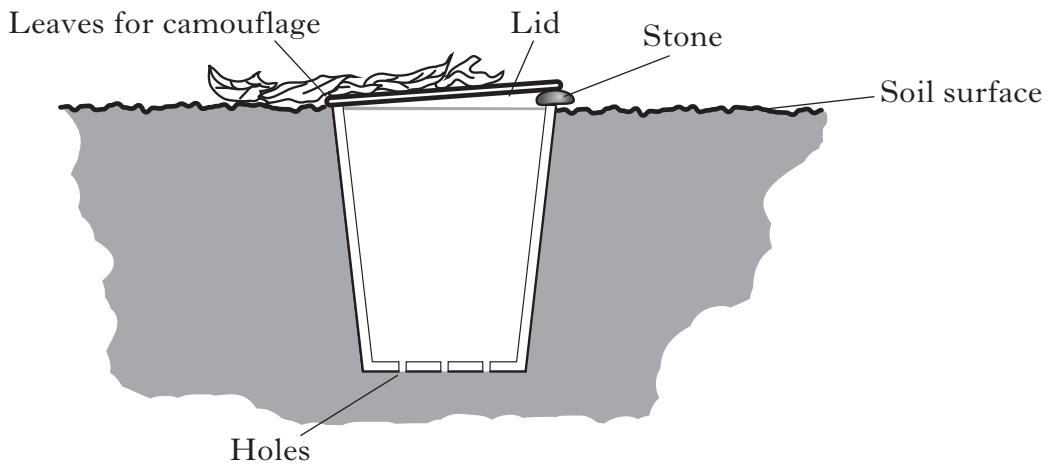
_____ **1**

[Turn over

Marks

6. (continued)

(*c*) Name the piece of equipment shown below, which is used to collect invertebrates.



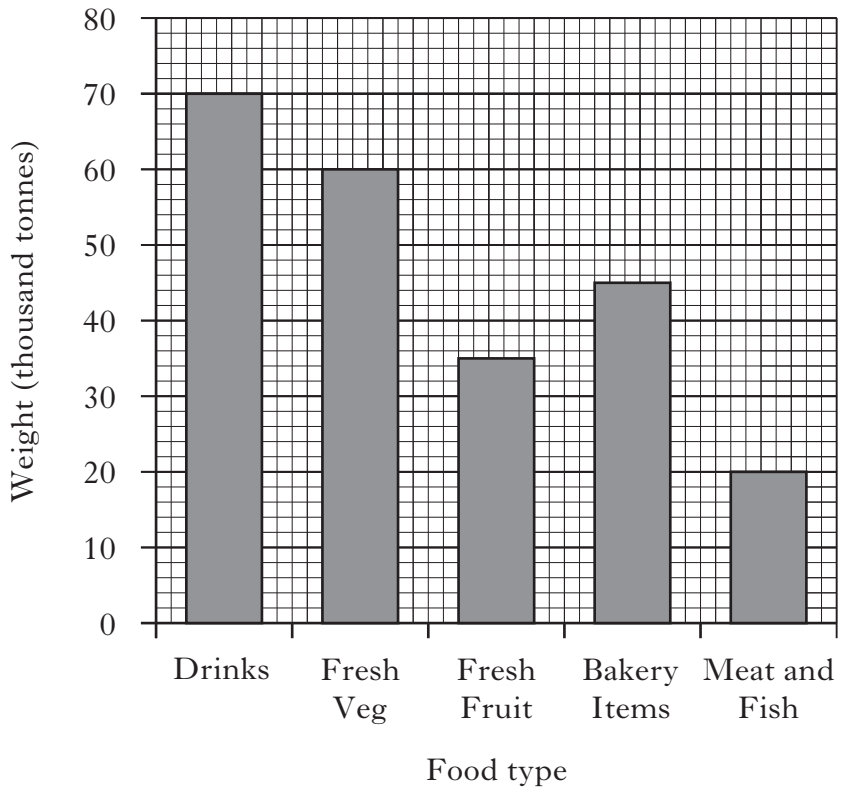
Equipment name _____ **1**

(*d*) Complete the following statement.

Ecosystem = Habitat + _____ **1**

Marks

7. The graph below shows the type and weight of food waste in Scotland. (Source: government statistics)



(*a*) (i) What **weight** of bakery items was wasted?

_____ thousand tonnes **1**

(ii) Calculate the simple whole number ratio of the waste weight of fresh veg to that of meat and fish.

Space for calculation

Fresh veg _____ : _____ meat and fish **1**

(iii) Suggest **one** reason why there is so much food wasted.

_____

_____ **1**

[Turn over

7. (continued) *Marks*

(*b*) The total annual cost of food waste is £500 million of which meat and fish waste is £125 million.

Calculate the annual cost of meat and fish waste as a percentage of the total.

Space for calculation

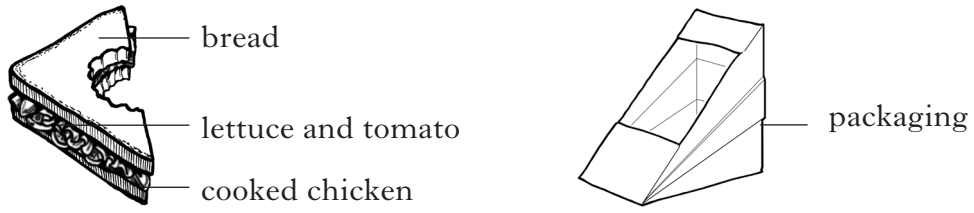
_____ % **1**

(*c*) Some food waste can be composted.

The following table gives information about types of food and whether they can be composted.

Type of food waste	*Can it be composted?*
Uncooked food from plants	✓
Cooked food from plants and animals	✘
Uncooked food from animals	✘
Liquid food	✘

The diagram below shows the left-overs from a chicken salad sandwich.



(i) Circle the food waste(s) that could be composted.

Bread *Lettuce* *Tomato* *Cooked Chicken* **1**

(ii) Some sandwich manufacturers have reduced the packaging for their products.

Give **one** advantage to the environment of reduced packaging.

_____ **1**

(iii) Composting is an example of an initiative for the protection of the environment at local level.

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

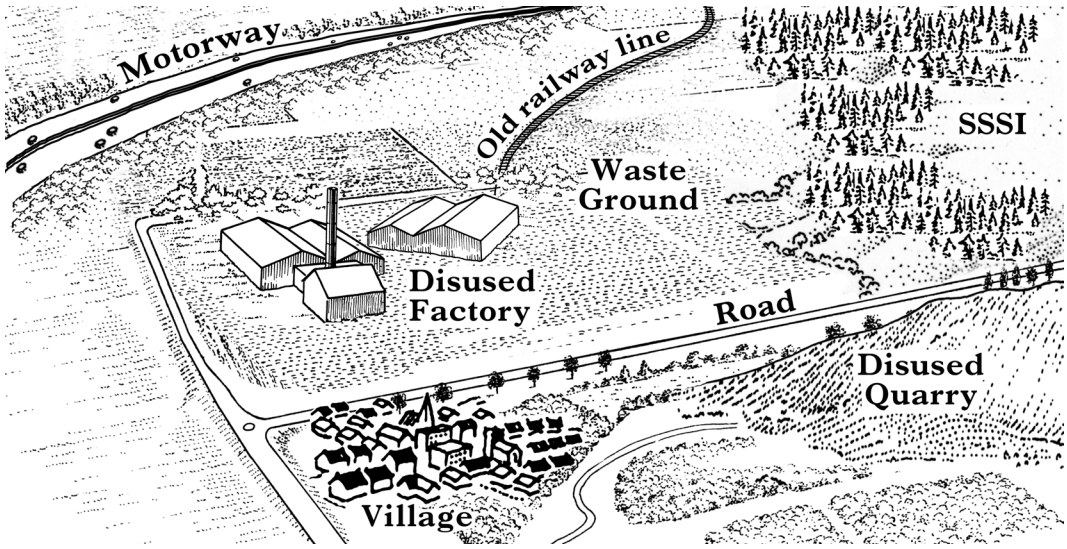
_____ **1**

[Turn over for Question 8 on *Page twenty*

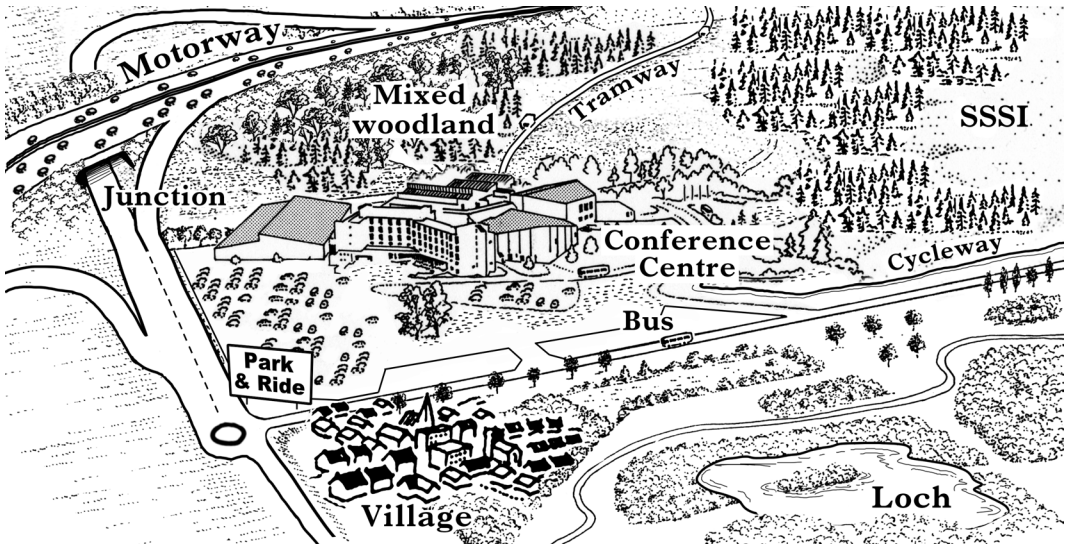
Marks

8. The sketch maps below show how an area has been developed between 2001 and 2013.

2001



2013



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

(i) Explain **one** effect the closure of the factory, shown as disused in 2001, would have had on the village community.

_____

_____ **1**

(ii) Give **one** other piece of evidence from the 2001 sketch map which shows that industry was a major land use of this area.

_____ **1**

Marks

8. (*a*) (continued)

(iii) The motorway junction was constructed to give easier access to the area.

Give **two** other examples of transport links which have improved access to the area.

1 _____ 2 _____ **1**

(iv) Give one reason why the mixed woodlands have been planted **next** to the motorway.

_____ **1**

(v) Identify **one** other change which has taken place since 2001 and give **one** advantage and **one** disadvantage of this to the local community.

Change from _____

To _____ **1**

Advantage _____ **1**

Disadvantage _____ **1**

(vi) Suggest what has happened to biodiversity in this area between 2001 and 2013 and give a reason for your answer.

Tick (✓) the correct answer.

Biodiversity has

increased ☐

decreased ☐

stayed the same ☐

Reason _____ **1**

(*b*) The SSSI is a natural area of native woodland.

What does SSSI stand for?

_____ **1**

[Turn over for Questions 8(*c*) – 8(*e*) on *Page twenty-two*

Marks

8. (continued)

(*c*) The developers are working with local organisations to protect the environment.

Name **one** local organisation which protects the environment.

_____ **1**

(*d*) The conference centre attracts overseas visitors.

Give **two** additional facilities which would be required by these visitors.

1 _____ 2 _____ **1**

(*e*) Energy and water conservation will be important at the conference centre.

Give **two** ways in which you personally could reduce energy and water use at home.

Energy

1 _____

2 _____ **1**

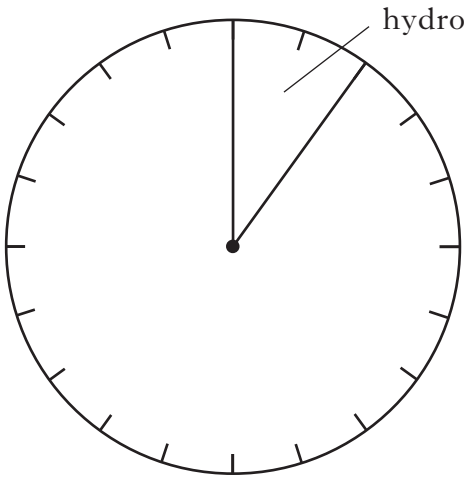
Water

1 _____

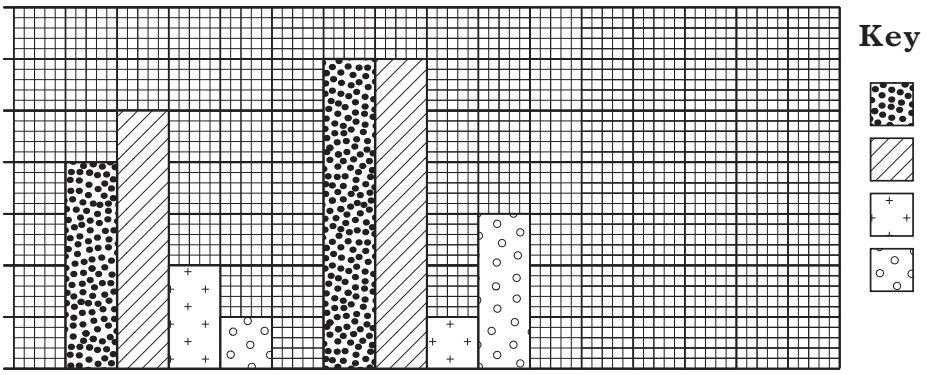
2 _____ **1**

[*END OF QUESTION PAPER*]

ADDITIONAL PIE CHART FOR QUESTION 2(*b*)(i)



ADDITIONAL BAR GRAPH FOR QUESTION 6(*a*)(ii)



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