FOR OFFICIAL USE

Total Marks

X055/101

NATIONAL QUALIFICATIONS 2009

WEDNESDAY, 10 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.

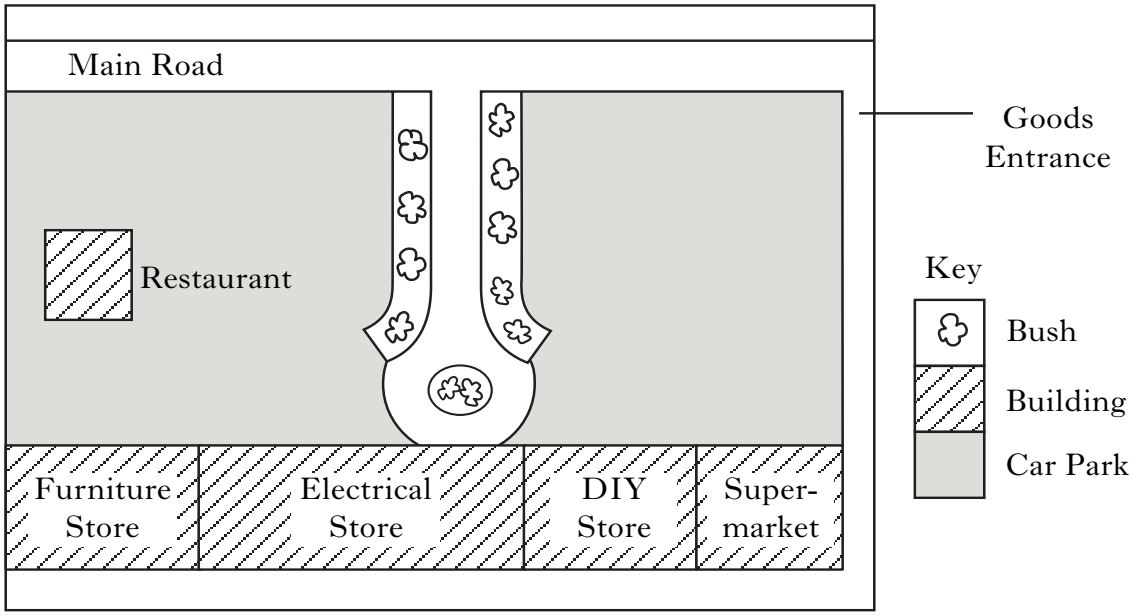
7 Before leaving the examination room you must give this book to the invigilator. If you do not, you may lose all the marks for this paper.

DO NOT WRITE IN THIS MARGIN

Marks

Answer ALL questions in the spaces provided.

1. The diagram below shows part of a retail centre.



(*a*) (i) From the diagram, give **one** example of a built environment.

_____ **1**

(ii) Place an **X** on the diagram to indicate a semi-natural environment. **1**

(iii) Name the type of environment which is not shown in the diagram.

_____ **1**

(*b*) Explain why the retail centre is sited near a main road.

_____ **1**

(*c*) Flat land is a factor which affects the positioning of a retail centre.
This is an example of a

P raw material
Q climate constraint
R physical requirement
S man-made resource.

Write the letter of the correct answer. _____ **1**

DO NOT WRITE IN THIS MARGIN

1. (continued)

Marks

(*d*) Planning permission is required before a retail centre is built. Suggest **one** reason for this.

_____

_____ **1**

(*e*) Suggest **two** types of job which would be available at the retail centre.

1 _____

2 _____ **1**

(*f*) The supermarket has installed detectors at the car park exits. These automatically lock the wheels of the trolleys from the supermarket. This means that no trolley can be pushed out of the car park.

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

_____ **1**

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

_____ **1**

(*g*) The supermarket has containers where customers can recycle plastic bags.

(i) Suggest **one** way that the supermarket can reduce the use of plastic bags.

_____ **1**

(ii) Suggest **one** other way that you can reduce the use of plastic bags.

_____ **1**

(iii) Explain why it is important that fewer plastic bags are used.

_____ **1**

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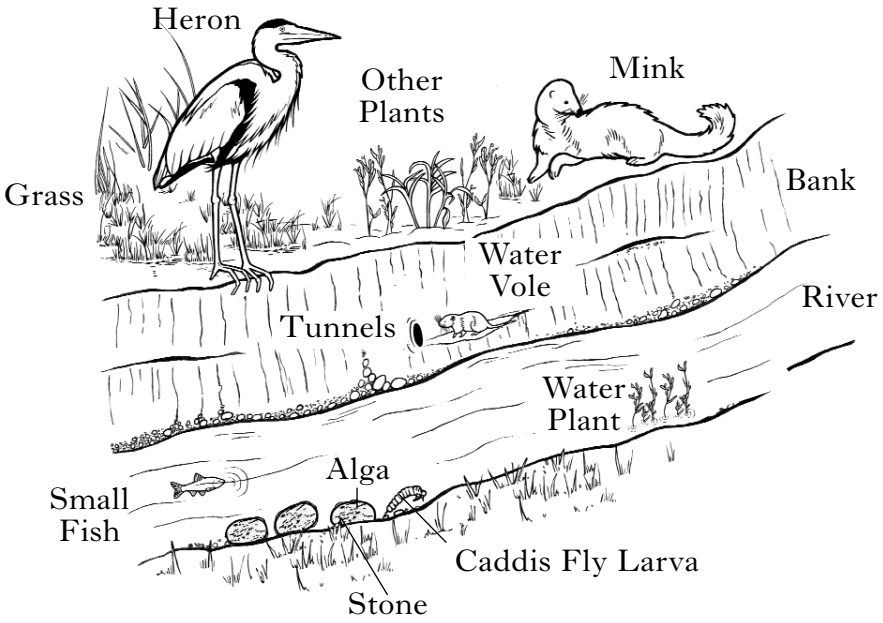
2. The diagram below shows some of the community in a riverbank habitat.



(*a*) Occasionally when there is a lot of rain, the river rises and flooding takes place.

(i) Choose **one** organism from the diagram and suggest how it will be affected by flooding.

Organism _____

Suggestion _____

_____ **1**

(ii) Give **one** abiotic factor which could be altered if the river floods.

_____ **1**

(iii) Name **one** piece of equipment which you could use to catch organisms in the river such as caddis fly larvae.

_____ **1**

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Marks

2. (continued)

(*b*) The food chain below is found in the river habitat.

alga ⟶ small fish ⟶ heron

(i) Name the producer.

_____ **1**

(ii) What type of feeding is shown by the heron?

_____ **1**

(iii) What do the arrows represent?

_____ **1**

(iv) Name the source of energy for this food chain.

_____ **1**

(*c*) Grass grows on the riverbank. This is the source of food for a water vole. Water vole is the prey of mink.

(i) Use this information to complete the food chain below.

grass	⟶			

1

(ii) Mink is an introduced (alien) species with no natural predators. Predict what will happen to the number of water voles if the mink are trapped and removed from the habitat. Underline your prediction.

Water vole numbers will increase

stay the same

decrease . **1**

(*d*) The water vole is an endangered species. Name **one** other species in danger of extinction in a wetland habitat.

_____ **1**

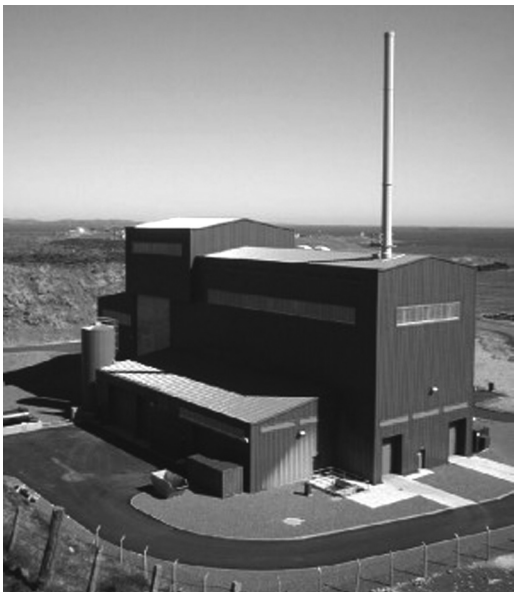
(*e*) Complete the following.

Habitat + Community = _____ **1**

DO NOT WRITE IN THIS MARGIN

Marks

3. The photograph below shows a modern incinerator which has been built on a Scottish island. This incinerator burns waste which otherwise would have been sent to a landfill site. It produces energy which heats up water. Hot water is pumped to homes and businesses.



(*a*) (i) Suggest **one** advantage and **one** disadvantage of this incinerator to the local people on the island.

Advantage _____ **1**

Disadvantage _____ **1**

(ii) It now costs £35 per month to heat a family house using energy from the incinerator. When using electricity before, it was costing £45 per month. Calculate how much the family saves in one year by using energy from the incinerator.

Space for calculation

£ _____ per year **1**

(iii) Suggest **one** way in which you could save electricity from being wasted at home.

_____ **1**

3. (*a*) (continued)

Marks

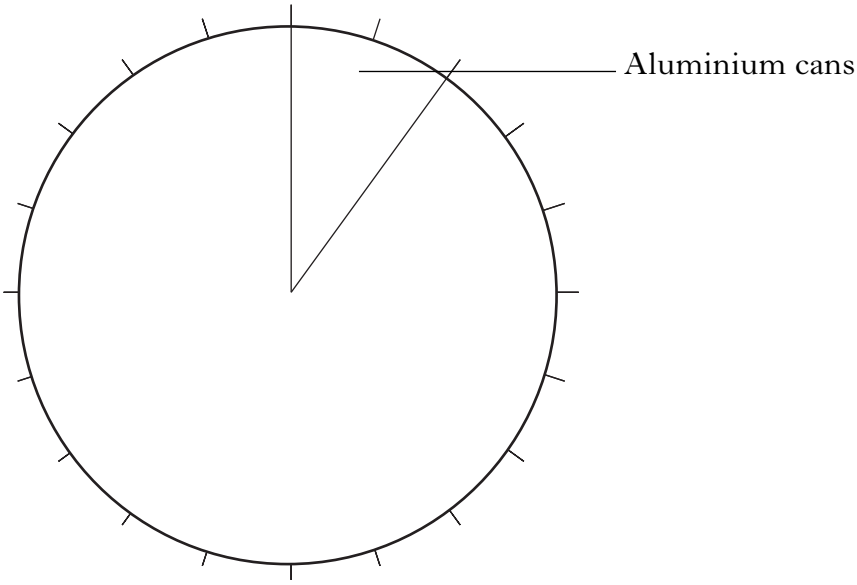
(iv) Building this incinerator is an example of an initiative for protection of the environment at local level. Give **one** example of an initiative at national level.

_____ **1**

(*b*) The table below shows how much of each type of waste is collected for recycling by a local authority in one year.

Type of waste	*Mass* (tonnes)
Paper	45
Plastic	10
Glass	30
Aluminium cans	10
Clothing	5

(i) Complete the pie chart below using the information from the table. (An additional pie chart is available on Page twenty-one.)



2

(ii) Suggest **one** other type of waste which can be recycled.

_____ **1**

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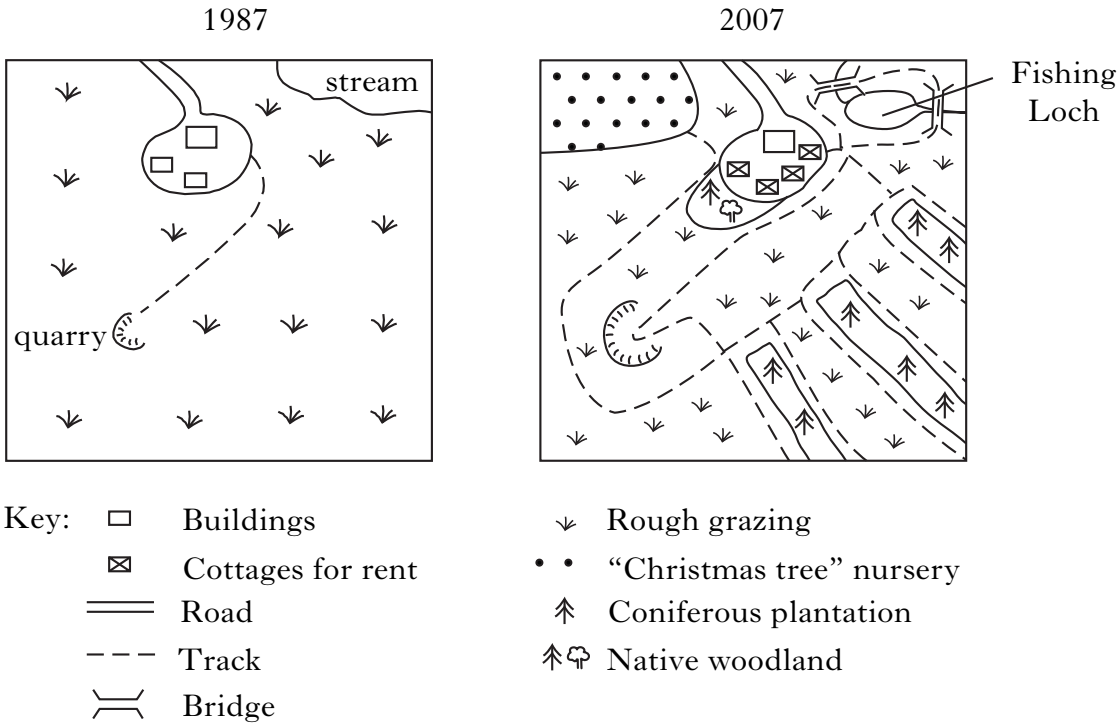
4. The diagrams below show part of a moorland estate in 1987 and in 2007.



(*a*) (i) What was the main land use in 1987?

_____ **1**

(ii) Give **two** new habitats found in 2007.

1 _____

2 _____ **1**

(iii) In 2007, the main source of income for the estate was from having pheasant shoots in the coniferous plantations.

Give **two** other ways in which the estate earns money.

1 _____

2 _____ **2**

(iv) Suggest where the raw materials came from to build all the tracks on the estate.

_____ **1**

DO NOT WRITE IN THIS MARGIN

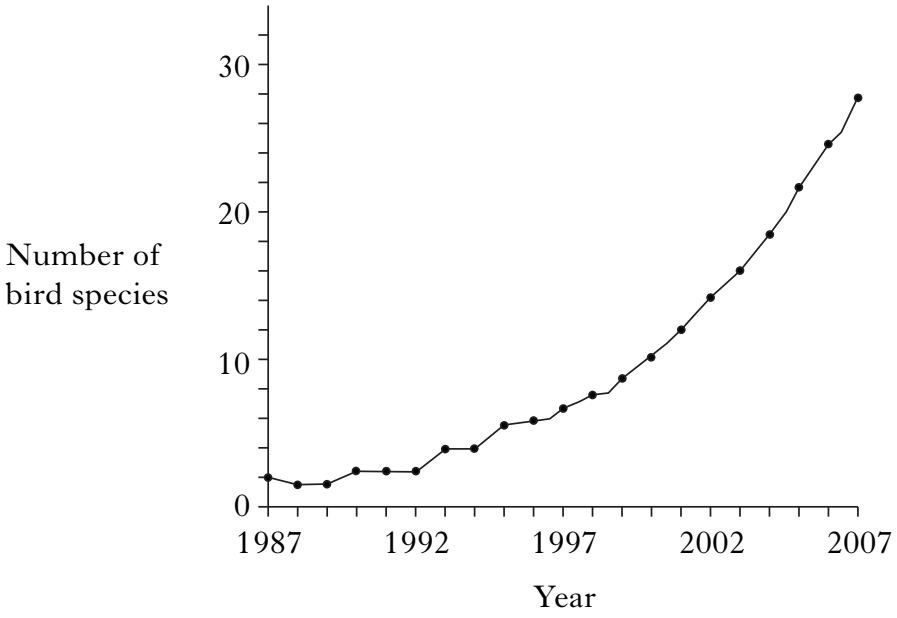
Marks

4. (*a*) (continued)

(v) Name **one** species found in native woodland which is threatened with extinction.

_____ **1**

(*b*) The graph below shows the number of bird species found on the estate between 1987 and 2007.



(i) Describe the trend in the number of bird species.

_____ **1**

(ii) Suggest a reason for this trend.

_____

_____ **1**

[Turn over

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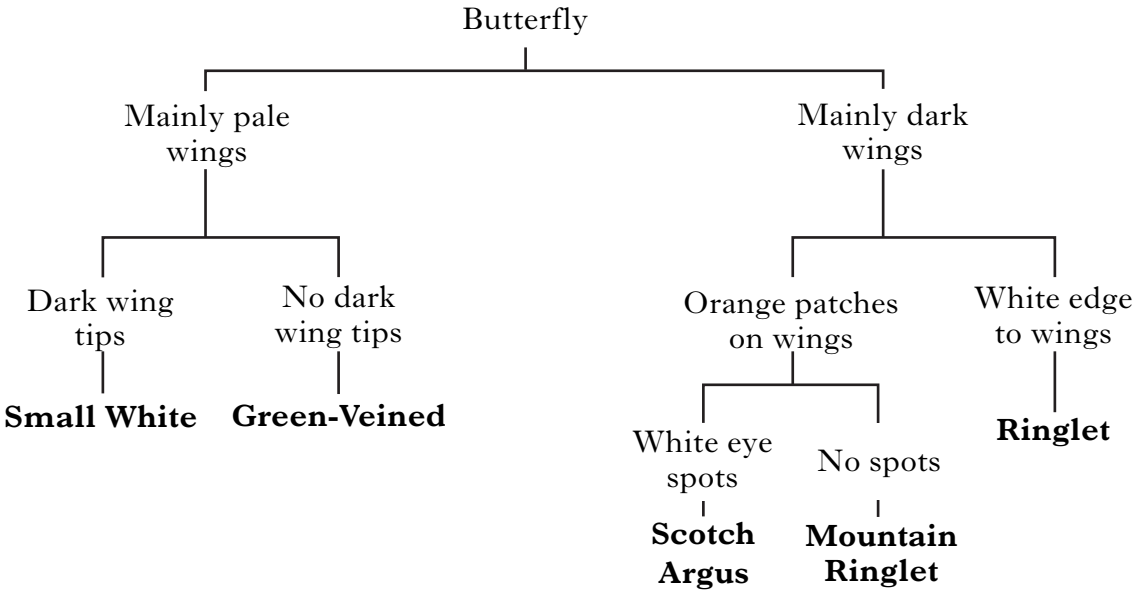
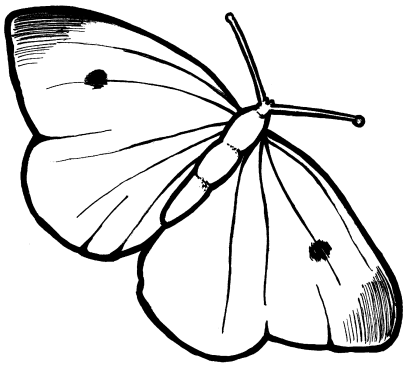
Marks

5. Students carried out a survey to find out the numbers of butterfly species found in the Cairngorm Mountains.

(*a*) The key below was used to identify the butterflies.



(i) Use the key to identify the butterfly drawn below.



Name _____ **1**

(ii) Give **two** features of the *Mountain Ringlet* butterfly.

1 _____

2 _____ **1**

DO NOT WRITE IN THIS MARGIN

Marks

5. (continued)

(*b*) Monitoring the numbers of the butterfly populations has shown that some species of butterfly are decreasing in number.

(i) Why is it important to monitor the populations of butterfly species?

_____

_____ **1**

(ii) Some scientists believe that the decrease in butterfly populations is due to an increase in worldwide temperatures.

Give the term used to describe this environmental effect.

_____ **1**

[Turn over

DO NOT WRITE IN THIS MARGIN

Marks

6. Read the passage below and answer the questions which follow.

Japanese Whaling

The International Whaling Committee (IWC) placed a moratorium or ban on commercial whaling in 1986. Environmentalists believe that this ban has saved whales from extinction. For example, it is estimated that there are now about 30,000 Humpback whales. However, this is only about one third of the Humpback population that there was before commercial whaling started. Japanese fishermen believe that the increase in the number of whales is reducing fish stocks.

The IWC allows Japan to catch 1,000 whales per year for research purposes. It has been reported that meat and blubber from these animals may end up being served in restaurants.

In 2007, Japan applied to the IWC for permission to increase its catch of Minke whales. Minke whales swim close to the coast and they have been caught for centuries by Japanese hunters using harpoons. With the catch of whale being limited, villagers involved in the whaling industry are unemployed for most of the year and are leaving their coastal villages to live and work in the cities.

(adapted from *The Scotsman*)

(*a*) (i) Name the **two** species of whale mentioned above.

1 _____ 2 _____ **1**

(ii) Calculate the number of whales Japan would be allowed to catch per year for research purposes if the IWC increased its allowance by 25%.

Space for calculation

_____ **1**

(iii) Name **two** parts of a whale which are eaten in Japan.

1 _____ 2 _____ **1**

DO NOT WRITE IN THIS MARGIN

6. (*a*) (continued) *Marks*

(iv) Give **two** effects on the local community of the whale catch being limited.

1 _____ **1**

2 _____ **1**

(v) Do you think that Japan should be allowed to catch more whales?

Circle your answer.

YES/NO

Give a reason for your answer.

Reason _____

_____ **1**

(*b*) The IWC is an organisation for the protection of the environment at an international level. Name an organisation at a **local** level for the protection of the environment.

_____ **1**

(*c*) Name **one** animal, not found naturally in Scotland, in danger of extinction.

_____ **1**

(*d*) Suggest a reason why fish stocks are declining.

_____ **1**

(*e*) In Europe, each country is only allowed to catch an agreed quantity of fish per year. Circle the correct term for this agreed quantity.

fishing quota *fishing limit* *annual limit* **1**

[Turn over

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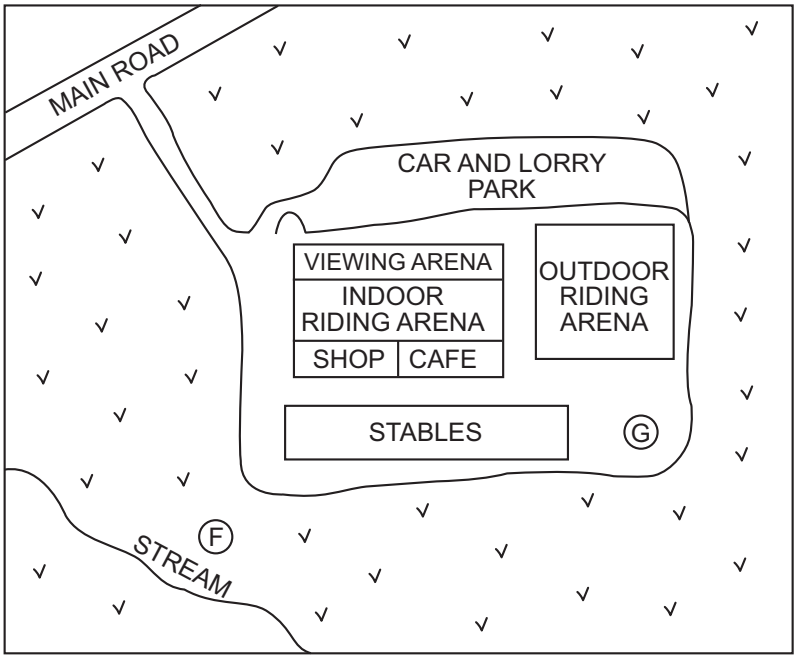
7. The sketch map below shows details of an equestrian centre for horse riding and trekking.



Key:

Fields for grazing

G and F possible muck heap sites

(*a*) (i) Give **two** physical requirements of the centre.

1 _____

2 _____ **1**

(ii) Suggest **two** labour requirements of the equestrian centre.

1 _____

2 _____ **1**

(iii) Suggest **one** advantage to the equestrian centre of having an indoor riding arena.

_____ **1**

DO NOT WRITE IN THIS MARGIN

Marks

7. (*a*) (continued)

(iv) Suggest **two** reasons why this is a good site for an equestrian centre.

1 _____

2 _____ **2**

(v) Give **one** advantage and **one** disadvantage of the equestrian centre to the local community.

Advantage _____

Disadvantage _____ **2**

(*b*) Horse manure is temporarily stored in a muck heap before it is sold to gardeners. On the diagram, there are two possible sites, **G** and **F**, for this muck heap.

Choose **one** of the sites and give a reason for your answer.

Site _____

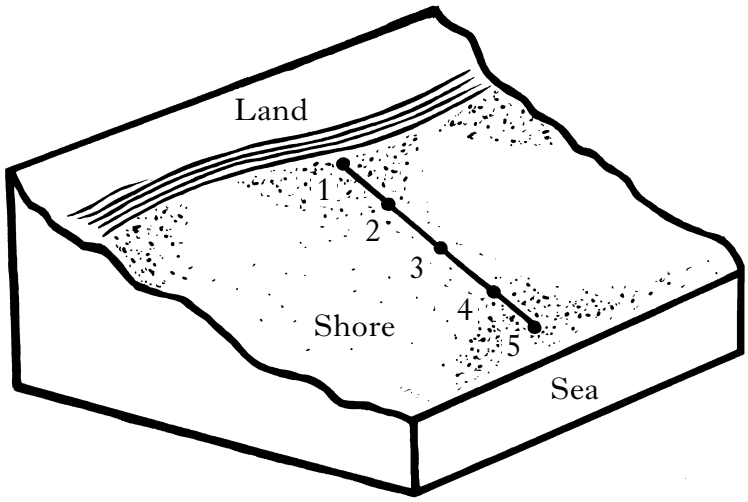
Reason _____

_____ **1**

[Turn over

Marks

8. A group of students investigated the distribution of two types of seaweed, Channelled wrack and Bladder wrack found on a seashore. The numbers of the seaweeds were counted at five sample points as shown in the diagram below. The time the seaweeds spent covered by seawater was also recorded.



The results are shown in the table below.

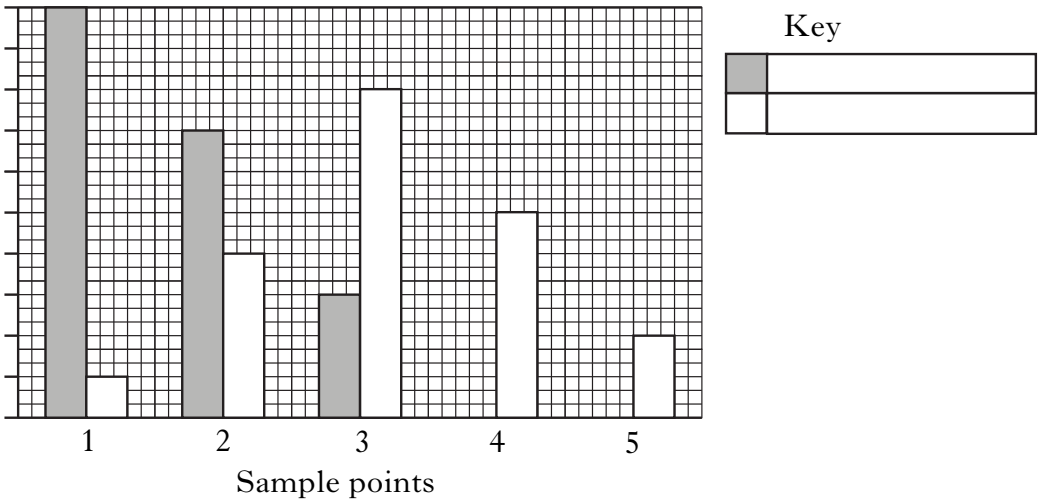
Sample point	*Number of Channelled wrack*	*Number of Bladder wrack*	*Time covered by sea water* (hours)
1	10	1	0
2	7	4	5
3	3	8	10
4	0	5	15
5	0	2	20

(*a*) (i) Using the information from the table, complete the bar graph below by

1 adding a label and scale to the y (vertical) axis

2 completing the key.

(An additional bar graph is available on Page twenty-one.)



2

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Marks

8. (*a*) (continued)

(ii) Complete the following conclusion from these results by using the words *decreases* or *increases*.

As you go down the seashore towards the sea, the number of

Channelled wrack _____ , and the number of

Bladder wrack _____ then _____ . **2**

(iii) Which type of seaweed is able to survive for longer out of sea water?

_____ **1**

(iv) Suggest how the results of this investigation could be made more reliable.

_____ **1**

(*b*) Name a piece of equipment which is used to count plants at the sample points.

_____ **1**

(*c*) Oil leaked out onto the seashore after a shipping accident. Tick (✓) a box to predict what is likely to happen to biodiversity on the seashore.

Biodiversity	increases	☐
	stays the same	☐
	decreases.	☐

1

(*d*) Which national organisation is responsible for monitoring the quality of seawater?

_____ **1**

[Turn over

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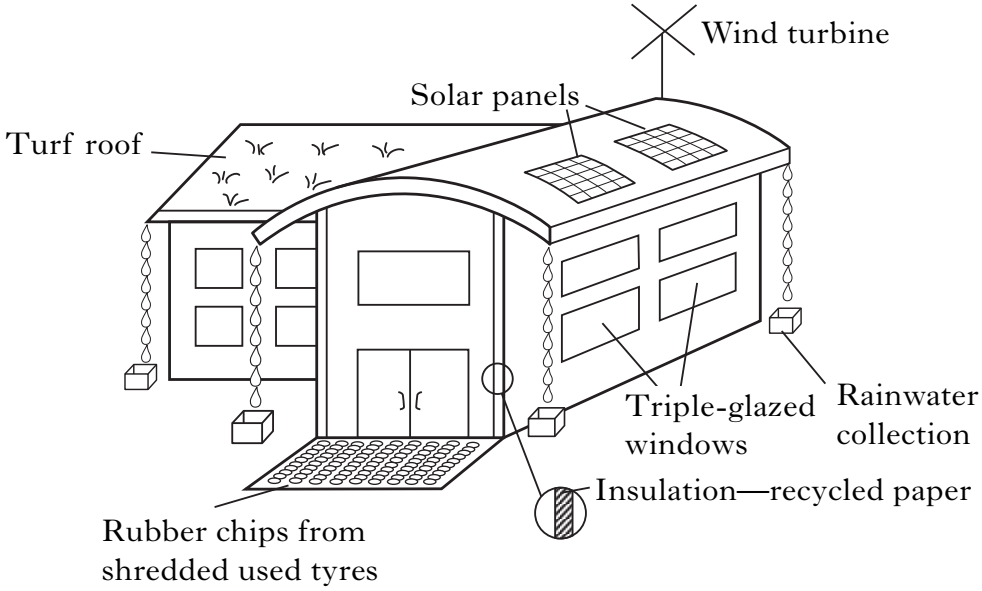
9. The sketch below shows a school which has been recently built. The school was designed to reduce its impact on the local and global environment.



(*a*) Wind is a renewable energy source used by the school.

(i) Give **one** advantage and **one** disadvantage of using wind as an energy source.

Advantage _____

Disadvantage _____ **2**

(ii) Name **one** other renewable source of energy used by the school.

_____ **1**

(iii) Give **two** ways by which heat loss from the school is reduced.

1 _____

2 _____ **1**

DO NOT WRITE IN THIS MARGIN

Marks

9. (continued)

(*b*) The table below shows some properties of materials which could be used on the outside of the building.

Type of material	*Source*	*Cost of material*	*Expected lifetime* (years)
Timber	Trees	ℒℒ	30
Bricks	Processed from clay	ℒℒℒℒ	100
Concrete blocks	Sand, cement and pebbles	ℒℒℒ	50

Cost key

ℒ ⟶ ℒℒℒℒℒ

Cheap ⟶ very expensive

Which type of material would you use?

Give a reason for your answer.

Material _____

Reason _____ **1**

(*c*) Copper has not been used as a building material for the school because it reacts with acid rain.

Give **one** other effect of acid rain.

_____ **1**

(*d*) Footpaths and cycle paths link the school to the surrounding houses.

Give **one** advantage of this to

the environment _____ **1**

the pupils _____ . **1**

[Turn over

9. (continued)

Marks

(*e*) Pupils at the school are applying for an "Environmental Award". This is awarded to schools which have a range of environmentally friendly projects.

Give an example of a project which pupils could set up to support their application.

_____

_____ **1**

(*f*) There is a bye-law concerning litter on the pathways.

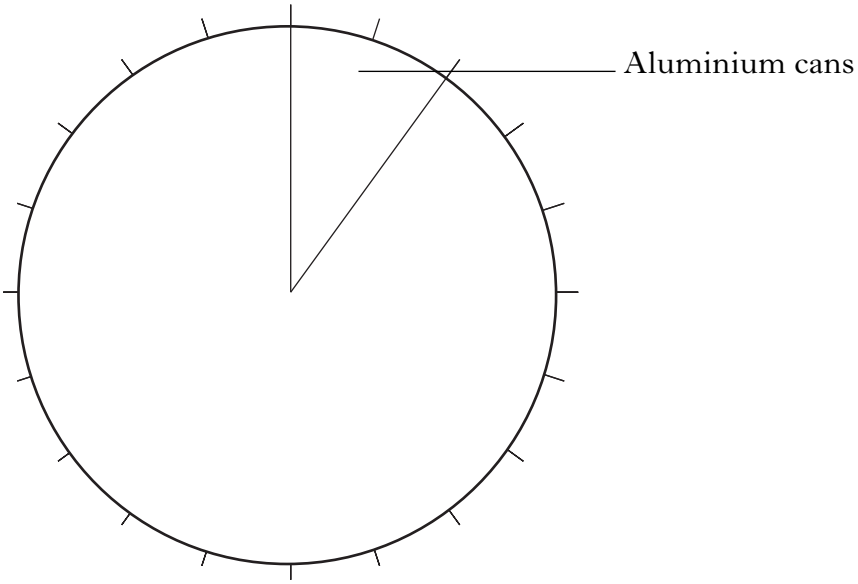
At which level does this legislation operate?

Circle the correct answer.

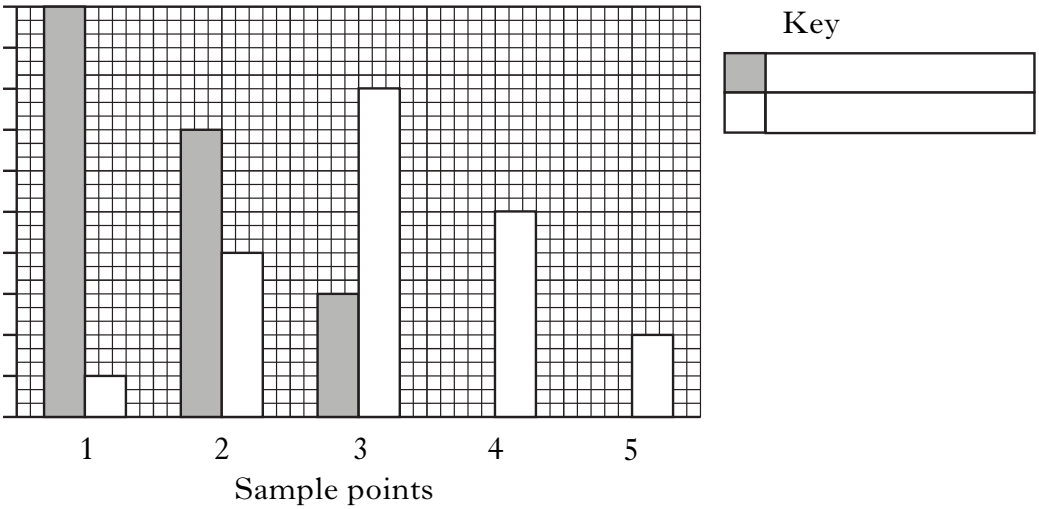
Local *National* *International* **1**

[*END OF QUESTION PAPER*]

ADDITIONAL PIE CHART FOR QUESTION 3 (b) (i)



ADDITIONAL PIE CHART FOR QUESTION 8 (a) (i)



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