

FOR OFFICIAL USE

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X055/101

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Total Marks

NATIONAL
QUALIFICATIONS
2011

WEDNESDAY, 8 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)

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Surname

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Date of birth

Day Month Year

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Scottish candidate number

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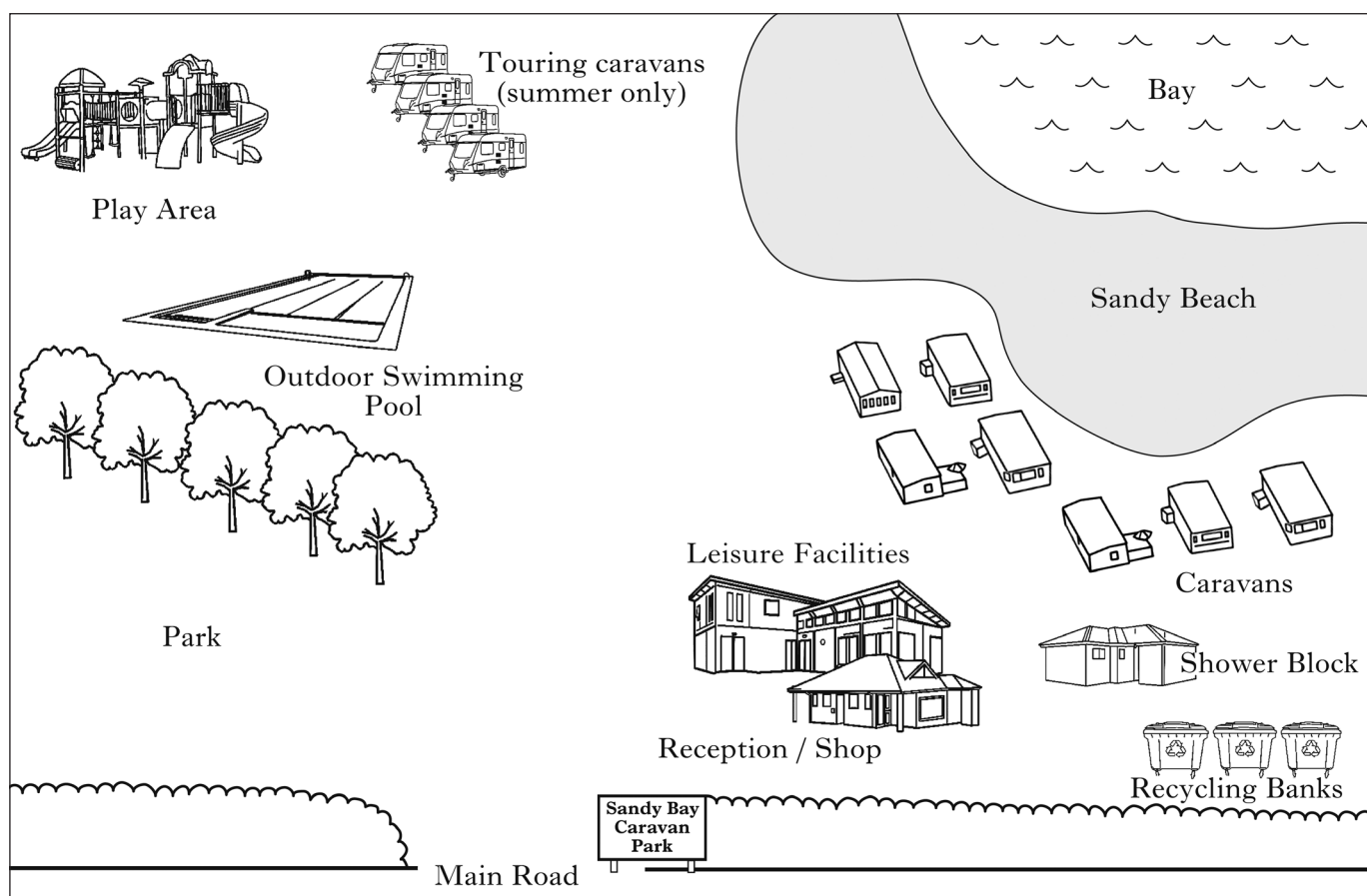
Number of seat

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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.



1. The diagram below shows part of Sandy Bay Caravan Park.



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

(i) Complete the table below.

<i>Type of environment</i>	<i>Example from the diagram above</i>
Natural	
Semi-natural	
Built	

Marks

2

(ii) The caravan park provides local employment. Give **two** jobs which would be available at the caravan park.

1 _____

2 _____

1

(iii) Give **two** features of the caravan park which would attract visitors.

1 _____

2 _____

2

DO NOT
WRITE
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MARGIN

1. (a) (continued)

Marks

- (iv) Name **two** types of waste which visitors could recycle in the banks provided.

1 _____

2 _____

1

- (v) Suggest **one** way in which the caravan park could be a disadvantage for local residents.

1

- (vi) A hedge has been planted around the caravan park. Give **one** benefit of this to wildlife.

1

- (b) As part of an Eco-Schools project, pupils collected and sorted litter found on the beach. The table below shows the types and quantity of litter found.

<i>Type of litter</i>	<i>Number of items</i>
Cigarette ends	321
Plastic bags	137
Food wrappers	942
Caps/Lids	937
Drinks containers	741

- (i) Which type of litter was most common on the beach?

1

- (ii) Choose **one** type of litter from the table and suggest how it can cause death to seabirds.

Item _____

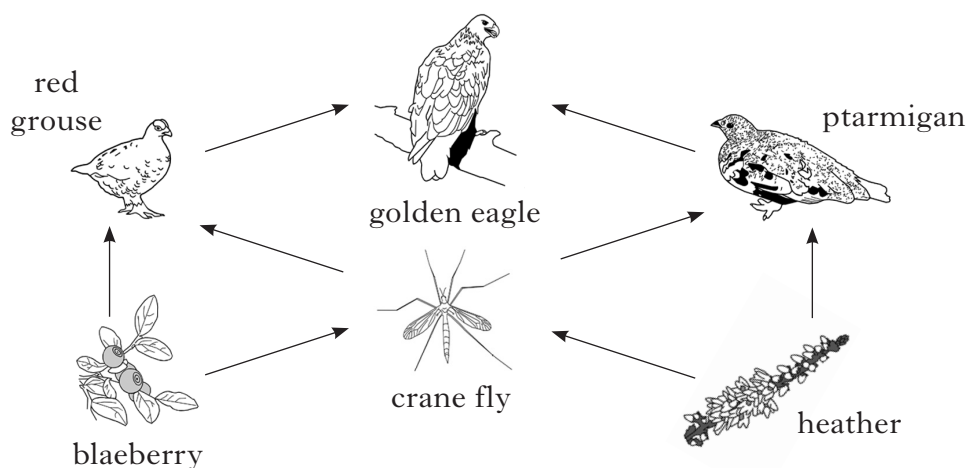
Suggestion _____

1

- (iii) Give **one** way in which the quantity of litter could be reduced.

1

2. The diagram below shows part of a moorland food web in Scotland.



Marks

- (a) (i) Name **one** herbivore from this food web.

_____ 1

- (ii) State the source of energy for this food web.

_____ 1

- (iii) How is the direction of energy flow shown in this food web?

_____ 1

- (iv) Complete the food chain below

_____ → _____ → Golden eagle 2

- (v) Name the type of organism, not shown in this food web, which feeds on dead plants and animals.

_____ 1

- (vi) The moorland is managed by an estate which has grouse shoots in August. Predict the effect this will have on the number of golden eagles by ticking (✓) the correct box and give a reason for your choice.

The golden eagle numbers will

increase ☐

decrease ☐

stay the same. ☐

Reason _____

_____ 1

Marks

2. (continued)

- (b) An SSSI has been created to protect rare orchids which have recently been found on the moorland.

(i) What does SSSI stand for?

_____ 1

(ii) Name **one** other plant which is endangered in Scotland.

_____ 1

- (c) Complete the following

Ecosystem = Habitat + _____ 1

- (d) In recent years, snow cover on Scotland's mountains has been decreasing. The ptarmigan is a bird which is adapted to living in the highest mountain environments by moulting its brown feathers at the end of summer to show white feathers in winter.



(i) Name the effect which is causing a decrease in snow cover.

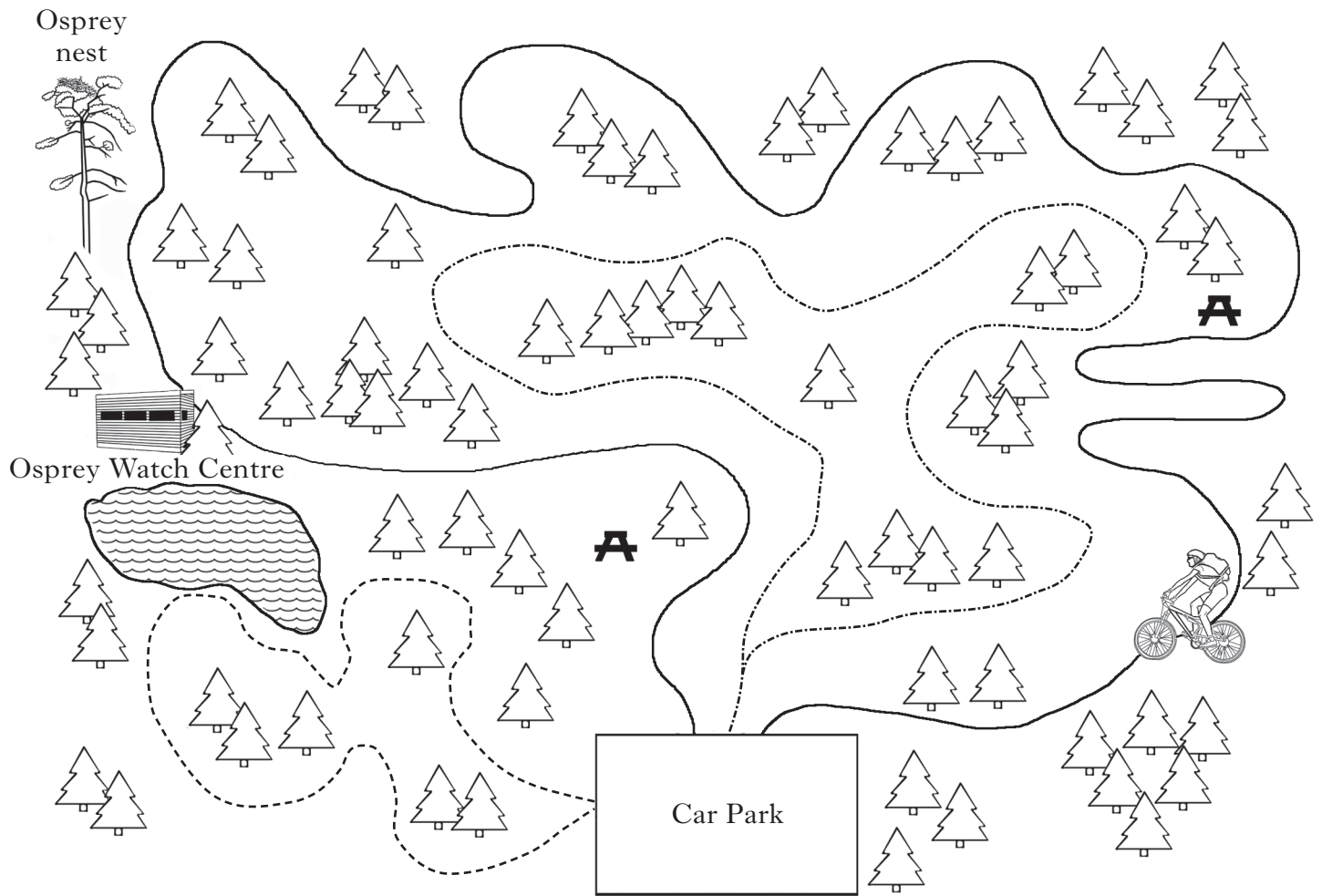
_____ 1

(ii) What problem could this decrease in snow cover give the ptarmigan?

_____ 1

[Turn over]

3. The diagram below shows mountain bike trails in a forest.



Key:

Mountain Bike Trail A - - - - -

Mountain Bike Trail B - . - . - .

Mountain Bike Trail C —————

Conifer Trees 

Water 

Picnic Site 

Marks

3. (continued)

(a) The table below shows information on the mountain bike trails.

<i>Trail</i>	<i>Distance (km)</i>	<i>Surface</i>	<i>Description</i>
A	8	Specially constructed firm track.	Mainly flat with some short hill sections.
B	16	Firm track with some uneven, muddy sections.	Several moderate hill climbs and some steep sections.
C	30	Uneven and muddy with some sections with loose gravel. Water crossings.	Wide range of steep, challenging hills.

(i) 25% of Trail B is made up of uneven, muddy sections.

Calculate how many km of Route B are uneven and muddy.

Space for calculation

_____ km

1

(ii) Which trail would be most suitable for someone who is mountain biking for the first time?

Give a reason for your choice.

Trail _____

Reason _____

1

(b) (i) Visitors can view the ospreys through a webcam at the Osprey Watch Centre.

Suggest why the centre has been built away from the nest.

1

[Turn over

Marks

3. (b) (continued)

- (ii) Ospreys feed on fish from the loch.

What type of feeding is shown by the osprey?

1

- (iii) The osprey is protected by legislation at national level.

Name **one** piece of national legislation for protection of the environment.

1

- (c) (i) The Forestry Commission, which manages the woodland, is an example of an organisation at national level.

Name **one** environmental organisation at local level.

1

- (ii) Parts of the mountain bike trails may be closed for short periods to allow Forestry Commission staff to carry out their work. During these times the following sign is displayed on the mountain bike trail.

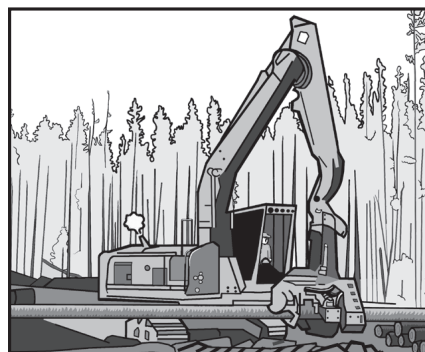
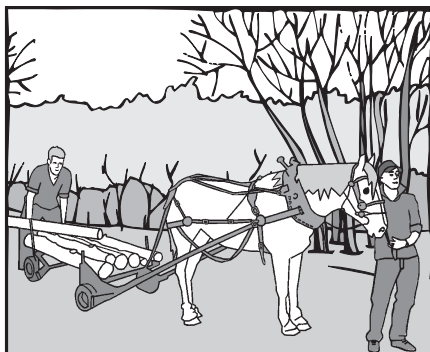
Suggest **one** reason why it is important that mountain bikers follow the advice of the sign.

1

Marks

3. (c) (continued)

- (iii) The diagrams below show two methods of extracting timber from a forest.



Suggest **one** advantage and **one** disadvantage of using horses to extract timber.

Advantage _____ 1

Disadvantage _____ 1

- (iv) When the trees are felled the timber has many uses.

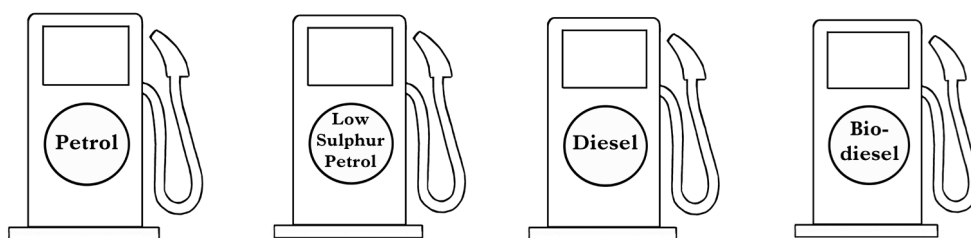
Give **two** uses of timber.

1 _____

2 _____ 1

[Turn over

4. (a) Fuel stations offer a choice of fuels as shown in the diagram below.



Marks

- (i) Which of the fuels shown above comes from a renewable resource?

1

- (ii) Low sulphur petrol reduces the concentration of sulphur dioxide in the car exhaust gases.

Explain **one** advantage of using low sulphur petrol.

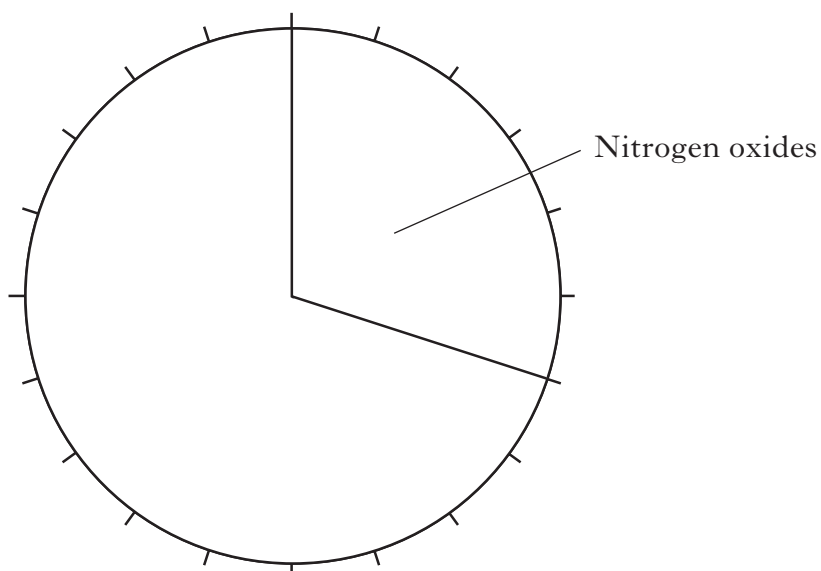
2

- (b) The table below shows the percentage (%) of exhaust gases produced by a car using diesel.

<i>Gas</i>	<i>Percentage (%)</i>
Carbon dioxide	60
Carbon monoxide	5
Nitrogen oxides	30
Other gases	5

Use the information in the table to complete the pie chart below.

(An additional pie chart is available on *Page twenty-four*)



2

Marks

4. (continued)

(c) A customer would like to buy a new car.

**Car A**

Type of fuel: Diesel

Cost: £17000

Fuel Consumption: 56 miles per gallon

Running cost: 6.0p per mile

Car B

Type of fuel: Hybrid (electric/diesel)

Cost: £30000

Fuel Consumption: 72 miles per gallon

Running cost: 7.5p per mile

(i) Which car, A or B, would you choose to buy?

Car _____

Give a reason for your choice.

1

(ii) A customer buys car A and drives 1000 miles.

How much will this journey cost?

Space for calculation

Answer £ _____

1

[Turn over]

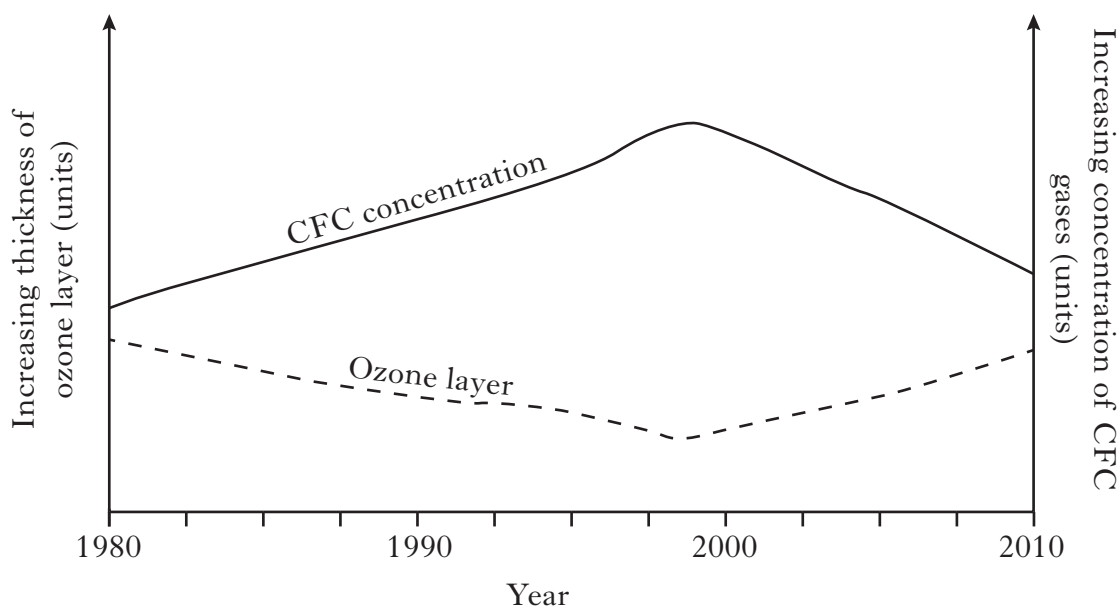
Marks

4. (continued)

- (d) Ozone, a gas found in the atmosphere, is affected by the production of CFC gases.

The thickness or size of this layer of ozone in the atmosphere can be measured.

The graph below shows the trends in CFC concentration and ozone layer thickness between 1980 and 2010.



- (i) Complete the following statement.

As the CFC concentration _____, the thickness of the ozone layer _____.

1

- (ii) International initiatives set targets to control the use of CFC gases. Name **one** international initiative.

1

- (iii) The ozone layer reduces the level of radiation reaching the Earth's surface.

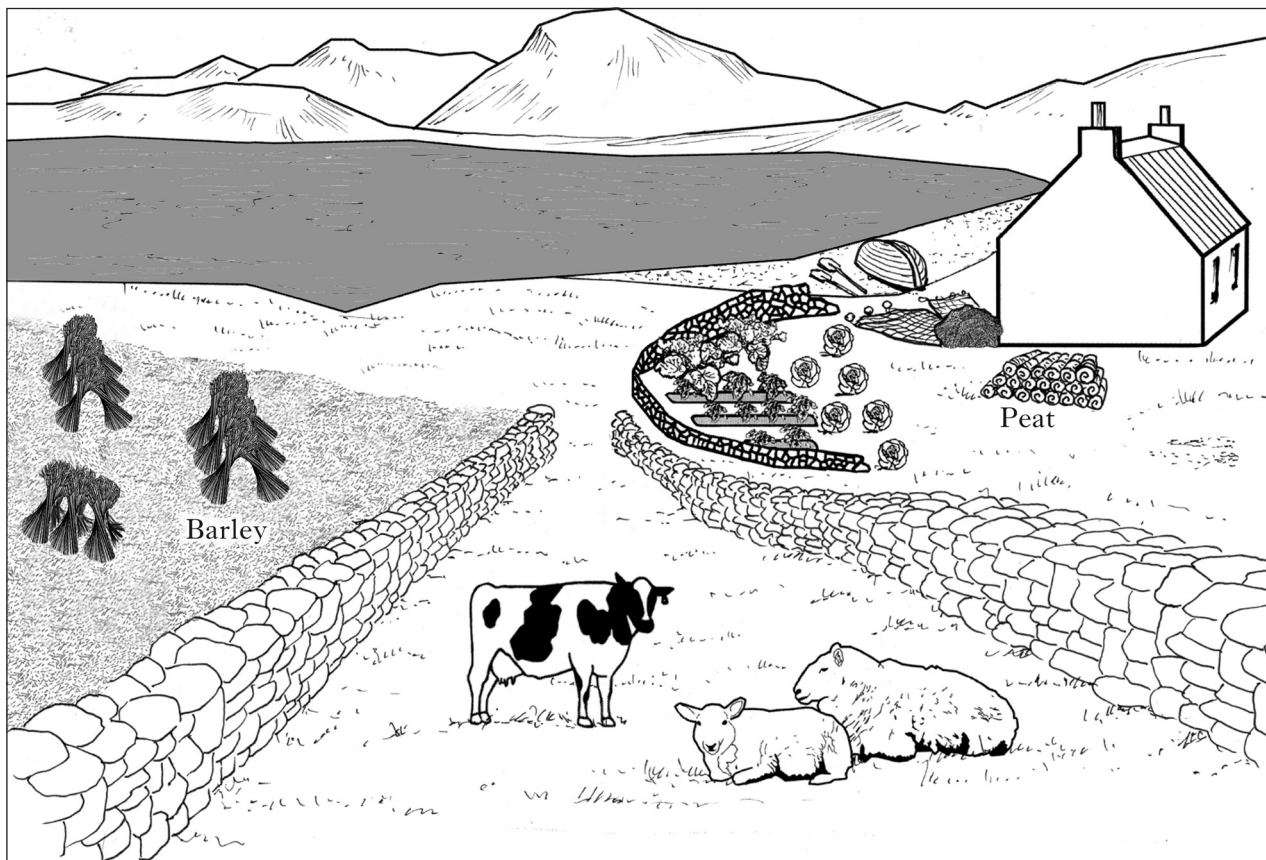
1 Name this type of radiation.

1

2 Give **one** effect which a thinner ozone layer could have on human health.

1

5. Crofting is a traditional way of life in some parts of Scotland. The diagram below shows some crofting activities.



(a) From the diagram

(i) Give **one** land use on the croft.

1

(ii) Give **one** water based activity on the croft.

1

(iii) Name **one** energy source traditionally used at a croft.

1

(b) Name **one** product from

(i) the cow; _____

(ii) the sheep. _____

1

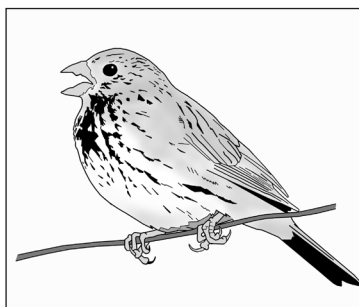
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Marks

5. (continued)

- (c) The picture below shows a corn bunting.



The corn bunting is a bird which eats grains or seeds eg barley. Traditionally the grain crop was cut by hand, bundled and stacked into stooks, and left to dry in the field as shown in the diagram on *Page thirteen*. Machines (combine harvesters) are now used to remove the crop very efficiently.

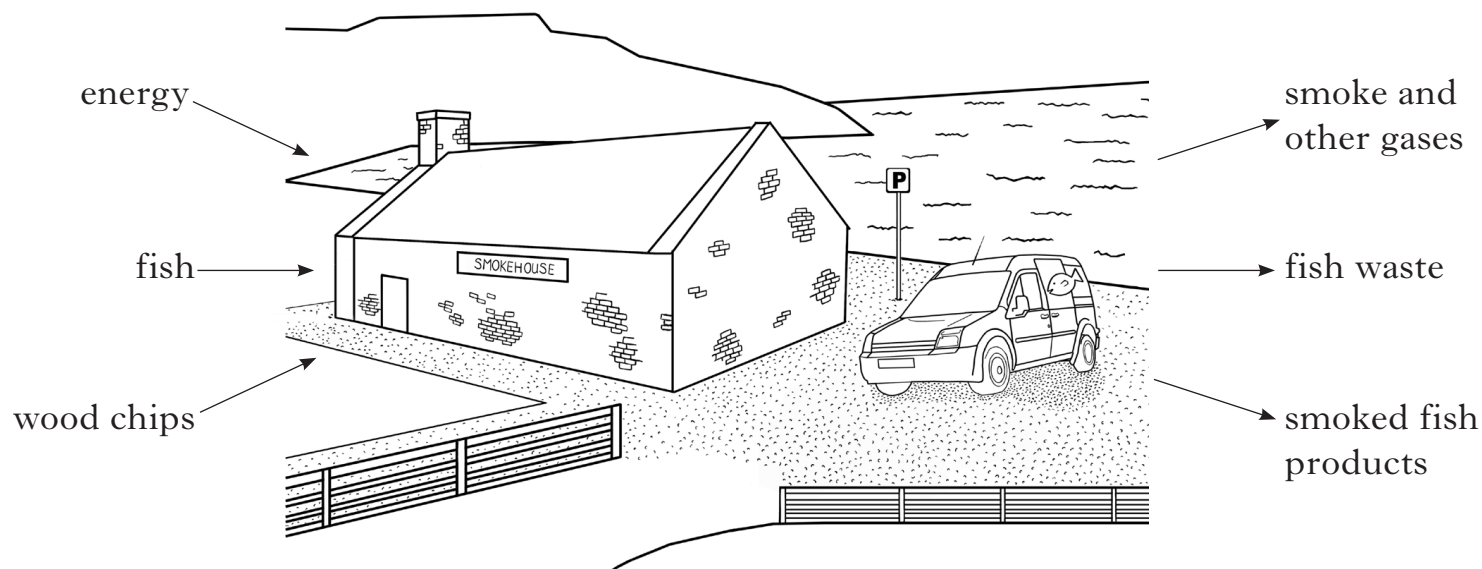
Suggest why this change in farming has led to a drastic decrease in corn bunting numbers.

1

- (d) Name **one** species found in native woodland which is in danger of extinction.

1

6. A company which makes smoked fish products has built a new smokehouse.
The diagram below shows some of the inputs and outputs of the smokehouse.



(a) From the diagram

- (i) Give **one** raw material the smokehouse requires.

1

- (ii) Raw materials and energy are physical requirements of the smokehouse.

Give **two** other physical requirements.

1 _____

2 _____

1

- (b) Name the organisation which is responsible for monitoring the smoke and other gases produced by industry such as the smokehouse.

1

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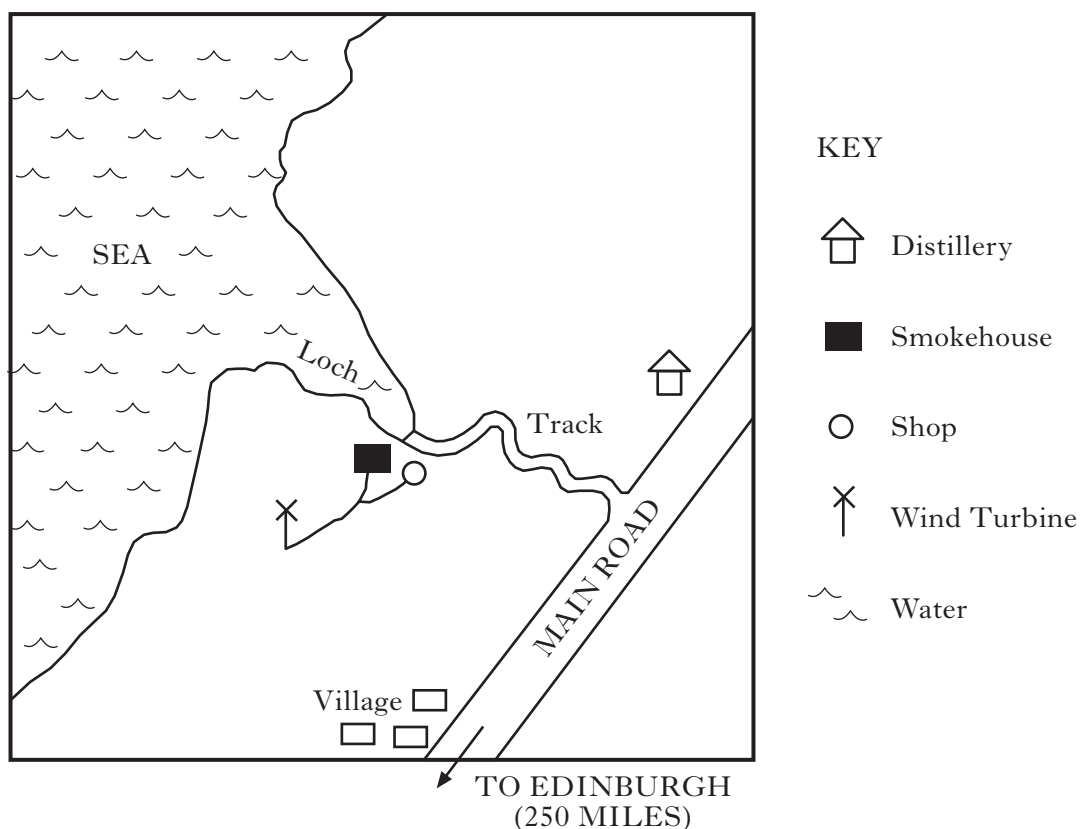
Marks

[Turn over

Marks

6. (continued)

- (c) The sketch map below shows the location of the smokehouse on the North West coast of Scotland.



- (i) The shop opens from March–September to sell the smoked fish products.

Circle the type of job which the shop provides.

Temporary

Seasonal

Permanent

1

- (ii) Customers buy smoked fish products all year round using mail order.

Give **one** way in which the company could advertise its products.

1

- (iii) Suggest **one** problem that the company might face in distributing its products.

1

*Marks***6. (c) (continued)**

- (iv) The fish waste can be processed into pet food at a factory 200 miles from the smokehouse.

Give **one** advantage and **one** disadvantage of this.

Advantage _____

1

Disadvantage _____

1

- (v) The smokehouse gets energy from a wind turbine.

Give **one** other source of renewable energy which it could use.

1

- (d) The woodchips for the smokehouse come from old barrels which were used by a local whisky distillery.

This is an example of

Tick (✓) your choice

Reduce ☐

Reuse ☐

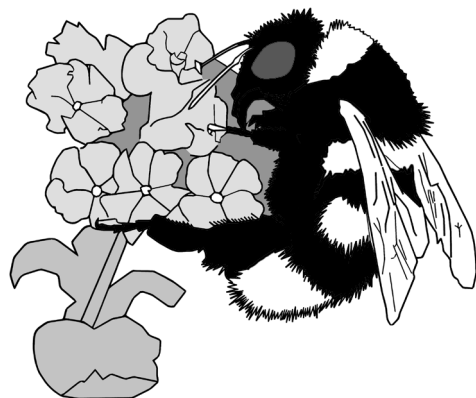
Recycle ☐

Give a reason for your answer.

1

[Turn over

7. Read the passage below and answer the questions that follow.



Bumblebees

Bumblebees spend the winter in underground nests. They are one of the first insects to come out of hibernation in the spring.

There are 29 different species of bumblebee in the UK, but many of them are becoming scarce. Two species have already become extinct. The bumblebee species which have greatly decreased in numbers are the species which feed on wild flowers found growing in old hay meadows.

In the last 50 years UK farmers have replaced 98% of old hay meadows with other crops. This has resulted in wildflowers becoming scarce. Gardeners can provide a food supply and habitat for bumblebees by growing a range of flowering plants. This will provide flowers throughout the summer months when the bumblebees are active.

- (a) (i) Give **one** reason why the number of bumblebee species is declining.

1

- (ii) Calculate the percentage of old hay meadows which remain in the UK.

Space for calculation

_____ %

1

- (iii) Give the word from the passage which means “*the place where an organism lives*”.

1

Marks

7. (continued)

- (b) The table below shows the flowering period of some plants which provide bumblebees with food.

Name of Plant	Month											
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Dead Nettle												
Cowslip												
Foxglove												
Poppy												
Honeysuckle												
Lavender												
Jasmine												



= not flowering

= flowering

From the table

- (i) How many of the plants listed flower in June?

1

- (ii) A gardener wants to provide for bumblebees from March to September. Which **two** plants could he choose?

1

- (iii) Using information from the passage, explain why gardeners do not need to grow winter flowering plants for bumblebees.

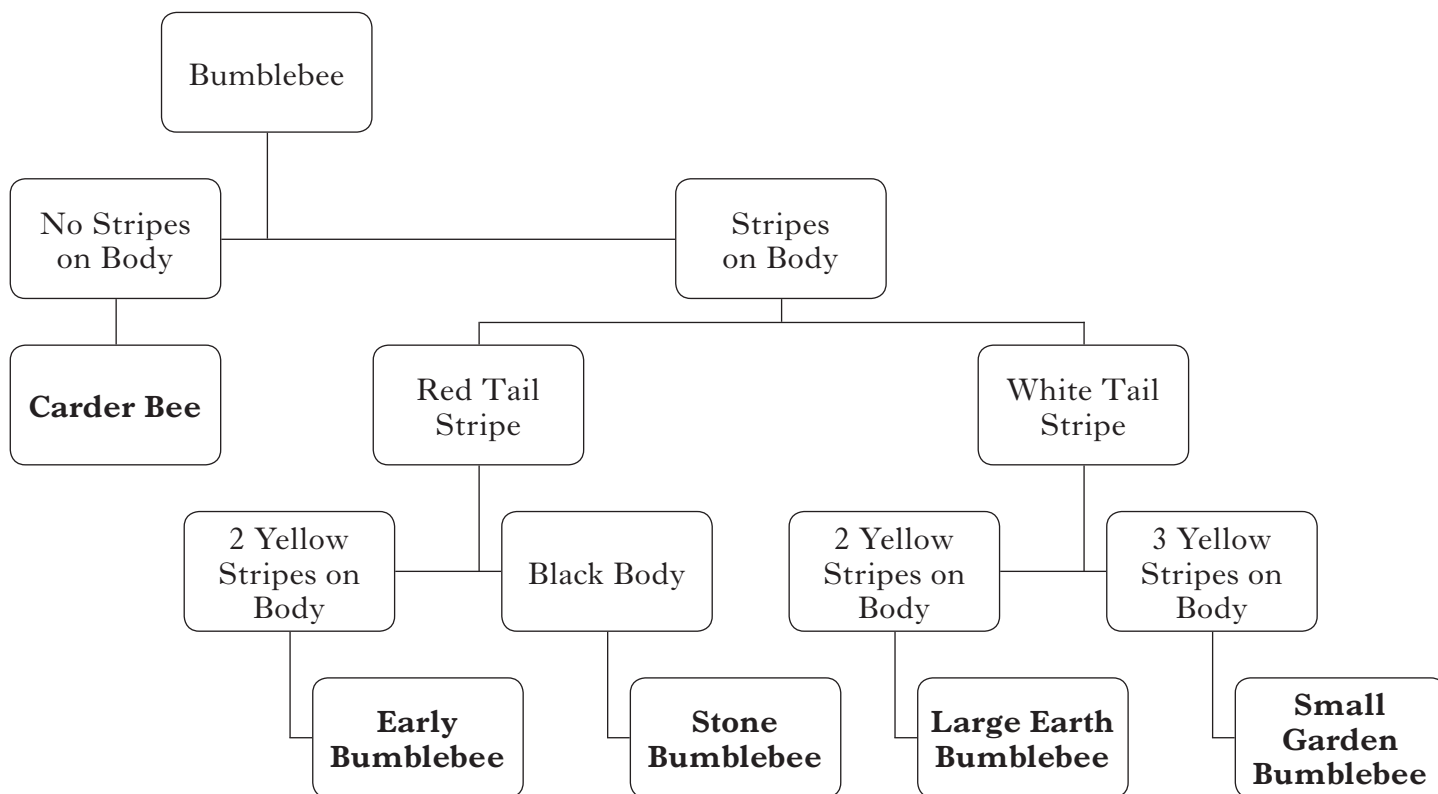
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- (c) Name an incentive scheme that encourages farmers to restore hay meadows.

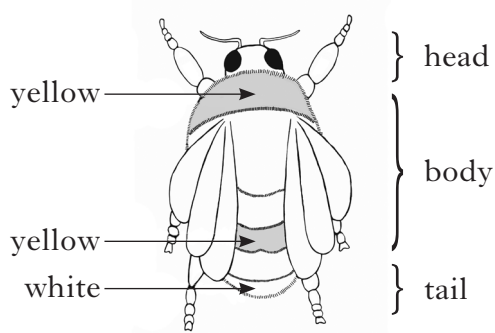
1

7. (continued)

(d) The key below can be used to identify some bumblebee species.



Use the key to identify the bumblebee drawn below.



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(i) _____ 1

(ii) Give **two** features of the Stone Bumblebee.

1 _____

2 _____ 1

*Marks***7. (continued)**

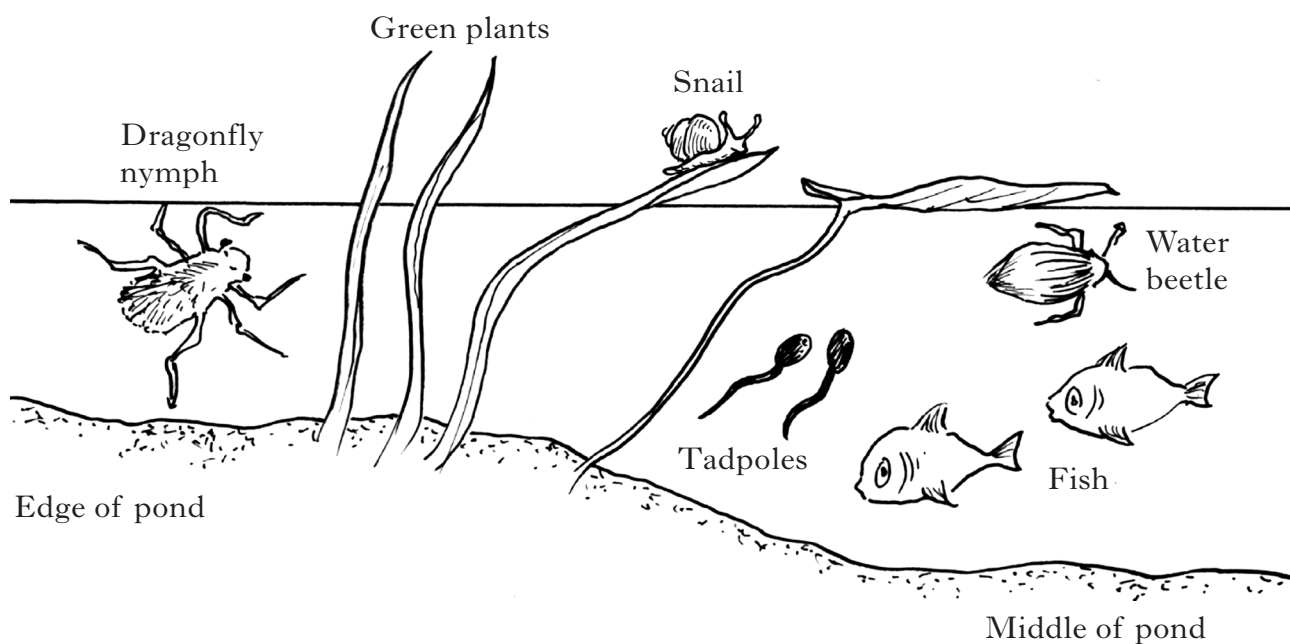
- (e) Why is it important to monitor the populations of bumblebee species?

1

- (f) Name **one** animal species not naturally found in the UK that is in danger of global extinction.

1**[Turn over**

8. The diagram below shows part of a pond that was investigated by some pupils.



Samples were taken from the water at the edge of the pond and from the deeper water in the middle of the pond.

The numbers of some organisms found in these samples were counted. The results are shown in the table below.

<i>Type of organism</i>	<i>Number at edge of pond</i>	<i>Number in middle of pond</i>
snail	36	1
dragonfly nymph	40	20
water beetle	24	60
tadpole	48	24
green plants	20	0
small fish	2	29

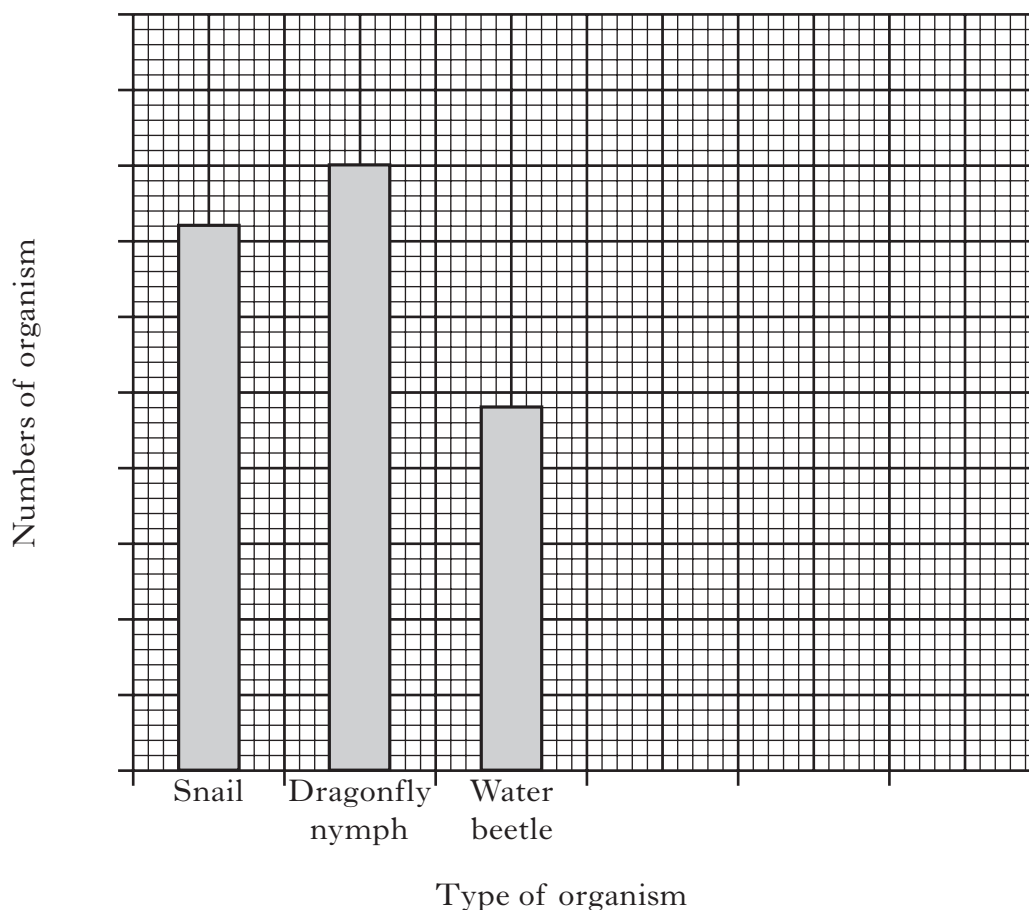
- (a) Complete the bar chart on the opposite page to show the numbers of organisms at the **edge** of the pond by adding

- (i) a scale on the y (vertical) axis;
- (ii) labels on the x (horizontal) axis;
- (iii) the bars for tadpole, green plants and small fish.

(An additional bar chart is available on *Page twenty-four*)

8. (a) (continued)

Marks



3

(b) Which area of the pond shows greater biodiversity?

1

(c) (i) Name **one** abiotic factor which could affect the distribution of the pond organisms.

1

(ii) Describe how you could measure this abiotic factor.

1

(d) Name **one** piece of equipment you could use to collect the organisms and describe its use.

Name _____

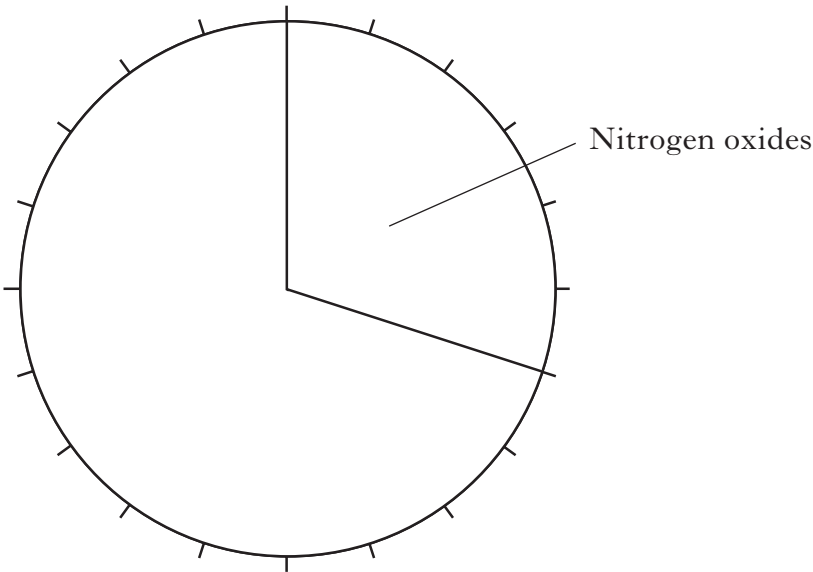
1

Description _____

2

[END OF QUESTION PAPER]

ADDITIONAL PIE CHART FOR QUESTION 4(b)



ADDITIONAL BAR CHART FOR QUESTION 8(a)

