

**GENERAL CERTIFICATE OF SECONDARY EDUCATION
ENVIRONMENTAL AND LAND-BASED SCIENCE**

B493/01

Management of the Natural Environment
(Foundation Tier)

Candidates answer on the question paper

OCR Supplied Materials:

None

Other Materials Required:

- Electronic calculator
- Pencil
- Ruler (cm/mm)

**Wednesday 20 May 2009
Afternoon**

Duration: 45 minutes



Candidate Forename		Candidate Surname	
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Centre Number						Candidate Number				
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INSTRUCTIONS TO CANDIDATES

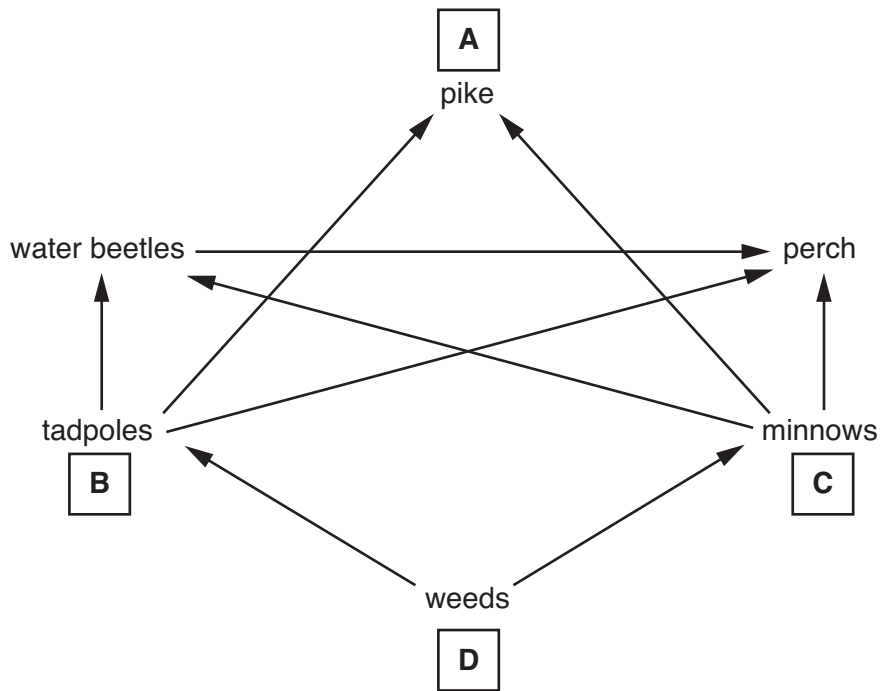
- Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes above.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure that you know what you have to do before starting your answer.
- Answer **all** the questions.
- Do **not** write in the bar codes.
- Write your answer to each question in the space provided, however additional paper may be used if necessary.
- There are no separate marks for the quality of written communication, but make sure that your answers are written in clear and well-structured English.

INFORMATION FOR CANDIDATES

- The number of marks is given in brackets [] at the end of each question or part question.
- The total number of marks for this paper is **36**.
- This document consists of **20** pages. Any blank pages are indicated.

Answer **all** the questions.

1 The diagram shows a simple food web.



Which letter represents a predator?

- A
- B
- C
- D

Answer **A, B, C or D** [1]

2 On what scale is the pH of soil measured?

- A 1 to 3
- B 1 to 7
- C 1 to 10
- D 1 to 14

Answer **A, B, C or D** [1]

3

- 3 The photograph shows a crop growing in a large area.
The same crop has been grown in this area for several years.



What term is used to describe the practice of growing the same crop in a large area for many years?

- A maxiculture
- B monoculture
- C permanent cultivation
- D perennial cultivation

Answer **A, B, C** or **D** [1]

- 4 The photograph shows clover plants.
Clover is a legume.



Choose the correct word from the list below to complete the following sentence.

Legumes are used in crop rotations because they increase the level of
in the soil.

nitrate

oxygen

phosphate

potash

[1]

5 This table is about the features of intensive and extensive production systems.

intensive production system	extensive production system

Put the following features of plant and animal production systems into the correct columns in the table.

uses a lot of labour

has small numbers in large area

is a natural production system

uses ICT for regular monitoring

has high running costs

[3]

- 6 Some people are concerned that the growing of GM crops may affect the wild flowers growing in hedgerows.

What is the most likely reason for their concern?

- A Disease from GM plants infects wild flowers.
- B Leaves from GM plants shade wild flowers.
- C Pollen from GM plants pollinates wild flowers.
- D Roots from GM plants compete with wild flowers.

Answer **A, B, C** or **D** [1]

- 7 The photograph shows organic vegetables.



Which statement is true for **all** vegetables that are produced as 'organic'?

- A They are grown without using fertiliser.
- B They are grown without using chemical herbicides.
- C They are grown from old natural varieties.
- D They are grown in loam soil with a lot of organic matter.

Answer **A, B, C** or **D** [1]

8 The photograph shows plastic wrapping and packaging on a farm.



(a) What kind of pollution does this represent?

- A air
- B noise
- C smell
- D visual

Answer **A, B, C or D** [1]

(b) Farmers now have to comply with EU regulations on waste disposal.

State **one** reason why burning plastic wrapping and packaging is not allowed.

.....
..... [1]

9 The photograph shows weeds growing in a crop of oats.



State **two** reasons why farmers control weeds in their crops.

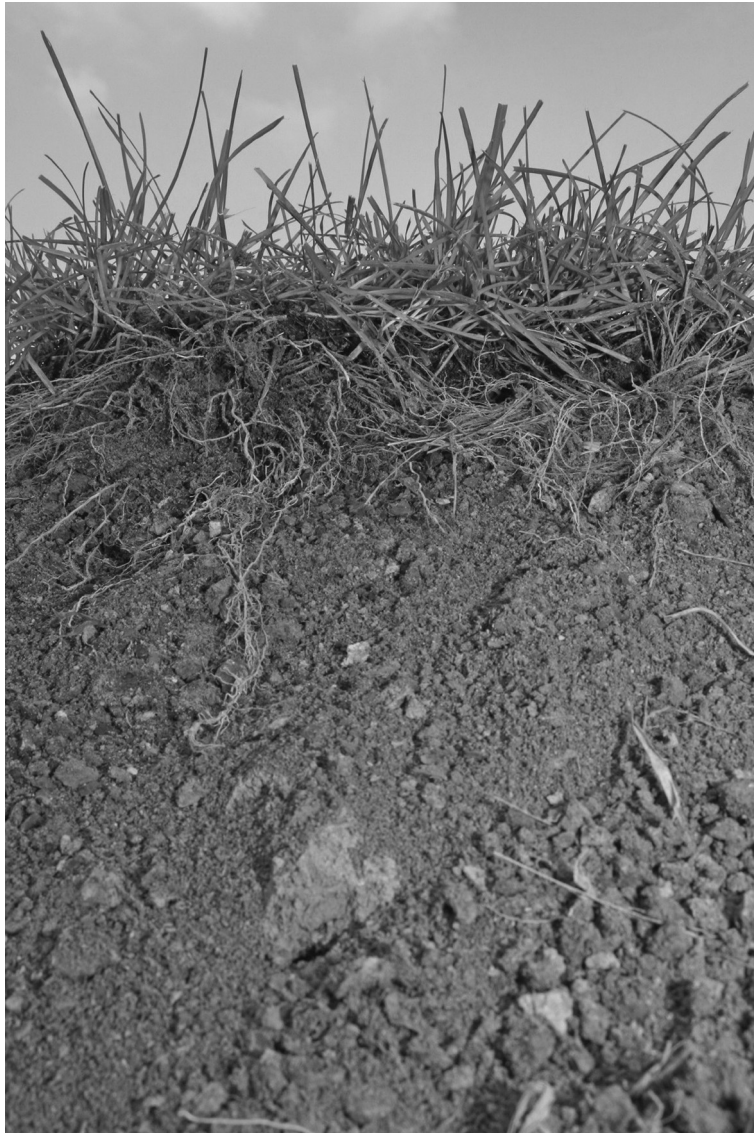
reason 1

.....

reason 2

..... [2]

10 The photograph shows a soil habitat in profile.



What is meant by the term 'habitat'?

.....

..... [1]

11 The photograph shows earthworms.



(a) Earthworms are found in the soil habitat.

State **one** adaptation the earthworm has for living in the soil.

.....
..... [1]

(b) Give **two** ways earthworms help to maintain the soil environment.

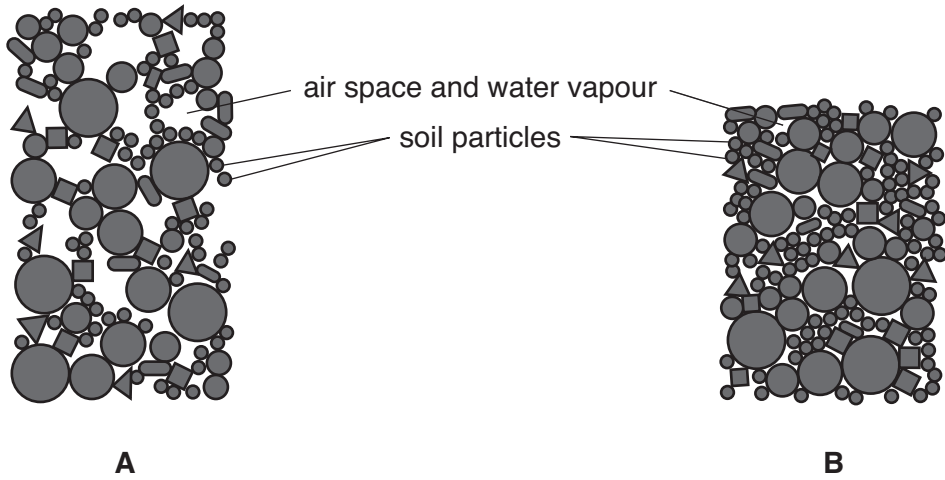
1

.....

2

..... [2]

12 The diagrams show the structure of two soil habitats from the side. The soil in diagram **B** has been compacted.



(a) Suggest what could have caused this compaction.

.....
..... [1]

(b) Plants grow in soil. They will grow better in soil **A** than in soil **B**. Suggest **two** reasons why soil **A** will produce better plants.

1

.....

2

..... [2]

- 13 The Government has produced a leaflet to advise on 'best practice' when using pesticides on the farm.



State **two** precautions that can be taken when applying pesticide in order to protect the environment and water courses.

- 1
-
- 2
- [2]

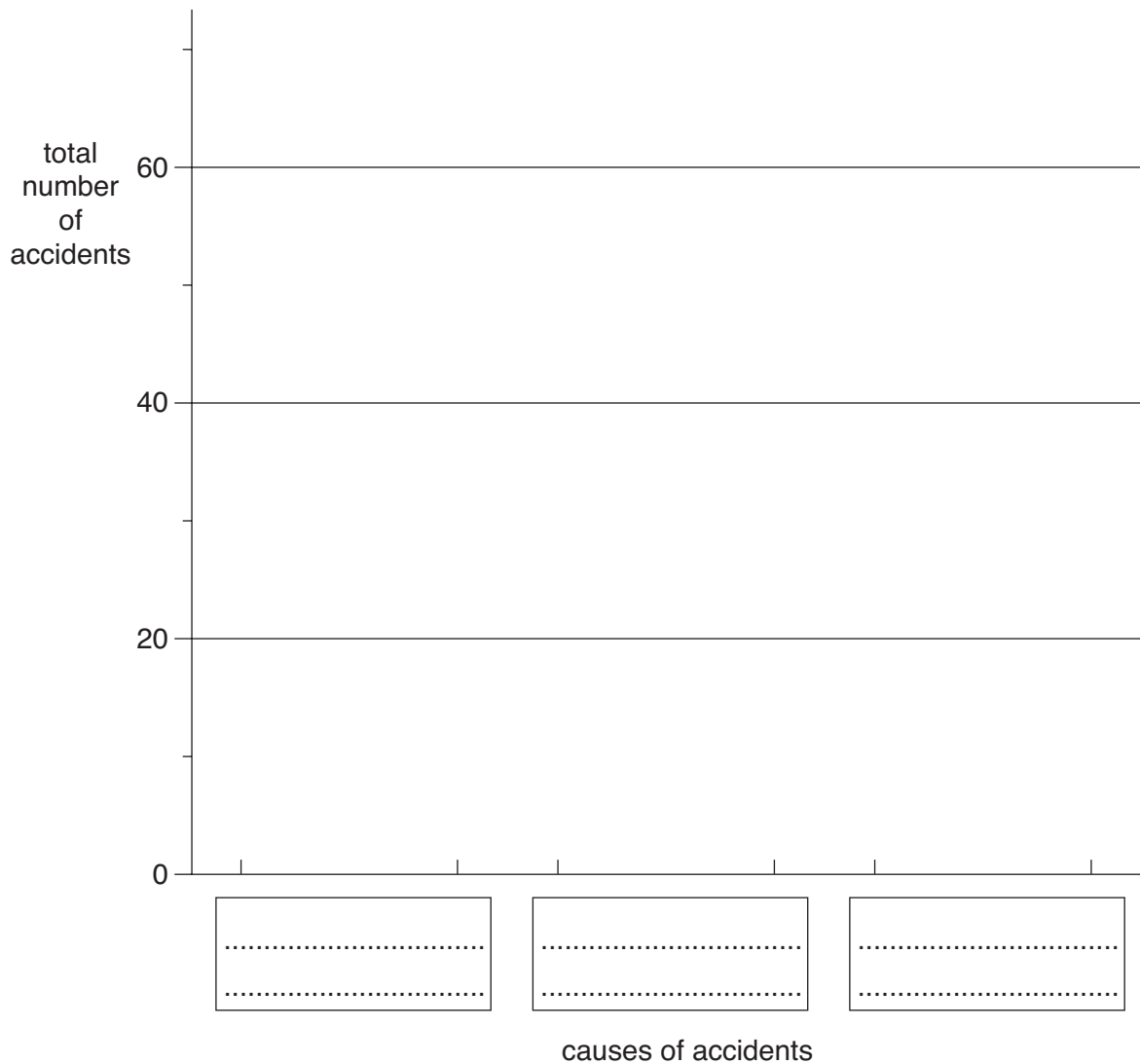
- 14 Accidents can happen during fieldwork.
 A school keeps records of these over several years.
 The table shows the causes and levels of injury in these accidents.

causes of accidents	levels of injuries sustained		
	serious	minor	no injury
poor behaviour	3	19	38
not following instructions	5	15	20
misuse of equipment	12	6	2

- (a) What caused the largest number of serious accidents?

..... [1]

- (b) Complete the bar chart to show the total number of accidents that resulted from each cause.



[2]

Turn over

15 The diagram shows the logos for some conservation groups.



Select one of the above or a conservation body you know about.

For the conservation body chosen state:

- its name
- its aim
- an example of a successful project it has carried out.

name

aim

.....

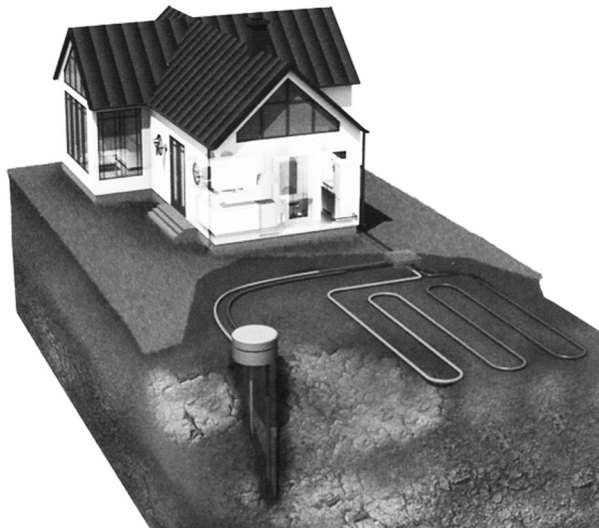
project

.....

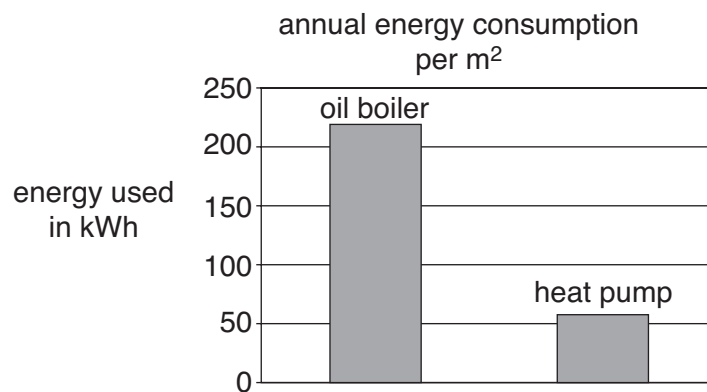
.....

[2]

- 17 The picture shows a heat pump in front of a house. A heat pump is a new alternative method of heating a house. Heat from the soil is taken up by water in underground pipes. These pipes connect to the house heating system.



- (a) The bar chart compares the energy used when a house was heated by an oil boiler with the energy used when it is heated by a heat pump.

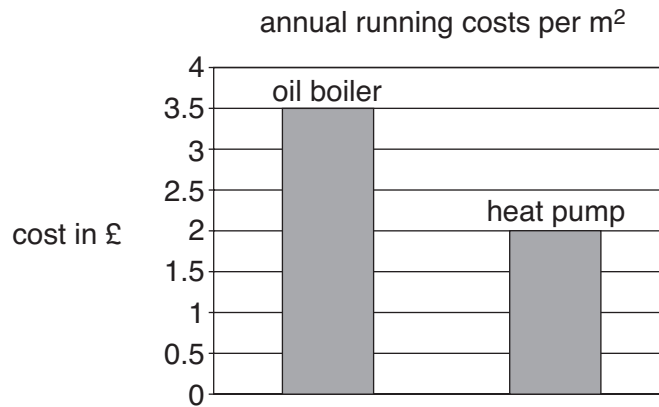


What conclusion can be made from the data?

.....

..... [1]

- (b) This bar chart compares the running costs of heating each m² of a house by an oil boiler and by a heat pump.

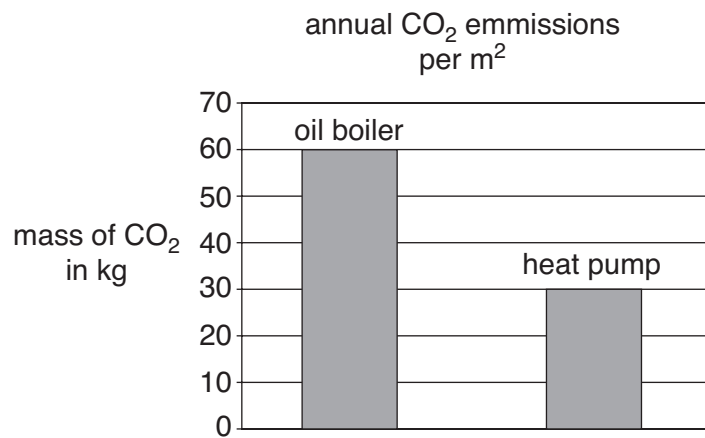


How much money is saved per m² by using the heat pump?

.....

..... [1]

- (c) This bar chart compares the CO₂ emissions from a house heated by an oil boiler and one heated by a heat pump.



What is the percentage reduction in CO₂ emissions when a heat pump is used?

- A 30%
- B 50%
- C 60%
- D 100%

Answer A, B, C or D [1]

(d) Heat pumps are an example of an alternative energy source.

Describe **three** other forms of alternative energy that may be used to produce electricity.

1

.....

2

.....

3

.....

[3]

END OF QUESTION PAPER

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