

Wednesday 5 June 2013 – Afternoon

GCSE ENVIRONMENTAL AND LAND-BASED SCIENCE

B681/01 Management of the Natural Environment (Foundation Tier)

Candidates answer on the Question Paper.
A calculator may be used for this paper.

Duration: 1 hour

OCR supplied materials:
None

Other materials required:

- Pencil
- Ruler (cm/mm)



Candidate forename		Candidate surname	
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Centre number						Candidate number				
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INSTRUCTIONS TO CANDIDATES

- Write your name, centre number and candidate number in the boxes above. Please write clearly and in capital letters.
- Use black ink. HB pencil may be used for graphs and diagrams only.
- Answer **all** the questions.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- Write your answer to each question in the space provided. Additional paper may be used if necessary but you must clearly show your candidate number, centre number and question number(s).
- Do **not** write in the bar codes.

INFORMATION FOR CANDIDATES

- Your quality of written communication is assessed in questions marked with a pencil (✎).
- 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 **50**.
- This document consists of **20** pages. Any blank pages are indicated.

Answer **all** the questions.

1 This photograph shows trees in managed forest.

This is an example of an intensive plant production system.



Put ticks (✓) in the boxes next to the **two best** reasons for growing the trees in this way.

- decreases water use
- easier to manage
- improves biodiversity
- reduces pollution
- uses less space

[2]

[Total: 2]

2 Using large machines on farmland can cause soil compaction and water logging.



Suggest **two** reasons why farmers still use large machines.

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.....

..... [2]

[Total: 2]

3 Some farmers collect and store rainwater on their farms.

This is called rainwater harvesting.

Choose the **best** reason for using rainwater harvesting.

- A It costs nothing to collect and use this water.
- B There is less dependence on other sources of water.
- C The taste of the water will be better.
- D The water will always be of better quality.

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

[Total: 1]

4 Field beans are an important crop in the UK and are often used as part of a crop rotation.



Choose the **best** reason for using field beans in a crop rotation.

- A They add nitrogen to the soil.
- B They improve soil structure.
- C They reduce water loss.
- D They repel soil pests.

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

[Total: 1]

5 The advert below appeared in a local newspaper.

**PUBLIC AUCTION
AGRICULTURAL LAND**

Lot 1
Area: 70 ha of level, open land
Soil: sandy loam

Lot 2
Area: 20 ha of level, open land
Soil: clay

Lot 3
Area: 50 ha of steeply sloping land
Soil: humus rich/peaty

(a) (i) The soil in **Lot 1** is most likely to be...

- A ...alkaline
- B ...free draining
- C ...high in potassium
- D ...waterlogged

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

(ii) The soil in **Lot 2** is most likely to...

- A ...be high in bacteria
- B ...blow away
- C ...be free from disease
- D ...be sticky

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

(b) A farmer buys **Lot 3** and adds some lime to the soil.

Why was the lime added?

- A to increase the calcium available to the plants
- B to improve the drainage
- C to make the soil more acidic
- D to reduce the air content in the soil

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

[Total: 3]

- 6 Farmland can be used to supply alternative sources of energy.

This use of farmland has advantages and disadvantages.

Complete the table by stating one advantage and one disadvantage of using **farmland** for each source of energy.

Source of energy	Advantage	Disadvantage
Solar		
Fuel crops		
Water		

[3]

[Total: 3]

7 The Rare Breeds Survival Trust (RBST) is a conservation organisation.



Which **two** of the following activities are the RBST most likely to be involved in?

Put ticks (✓) in the boxes next to the **two** most likely activities.

making sure animals are transported safely

monitoring the conditions in zoos

promoting the use of rare breed meat

keeping records of native farm animals

replanting hedgerows on farms

[2]

[Total: 2]

8 Aphids (greenfly) are common pests of plants.



Describe **two** ways the aphid is adapted to survive in its habitat.

.....

.....

..... [2]

[Total: 2]

9 Some scientists think that changes in the climate will affect the numbers of some birds in the UK.

These scientists think that, if the temperature rises, there will be larger numbers of some species of birds.

Suggest **three** different reasons why higher temperatures may increase the numbers of some species of birds.

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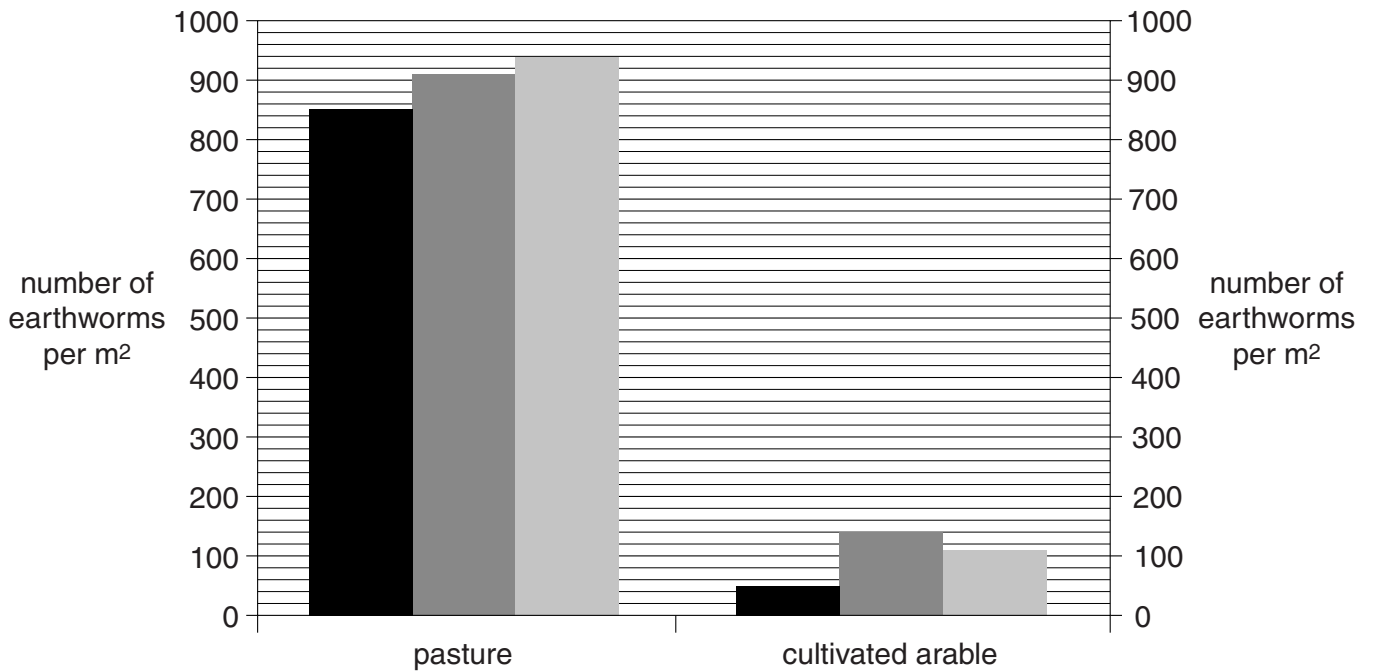
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..... [3]

[Total: 3]

10 Scientists investigated the numbers of earthworms in two different cultivation systems.

In each system they sampled three fields.



(a) What is the mean number of earthworms in **each** of the two cultivation systems?

(i) **Pasture**

- A 850
- B 900
- C 910
- D 940

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

(ii) **Cultivated arable**

- A 50
- B 100
- C 110
- D 140

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

(b) Suggest **two** reasons for the difference in the numbers of earthworms in pasture and in cultivated land.

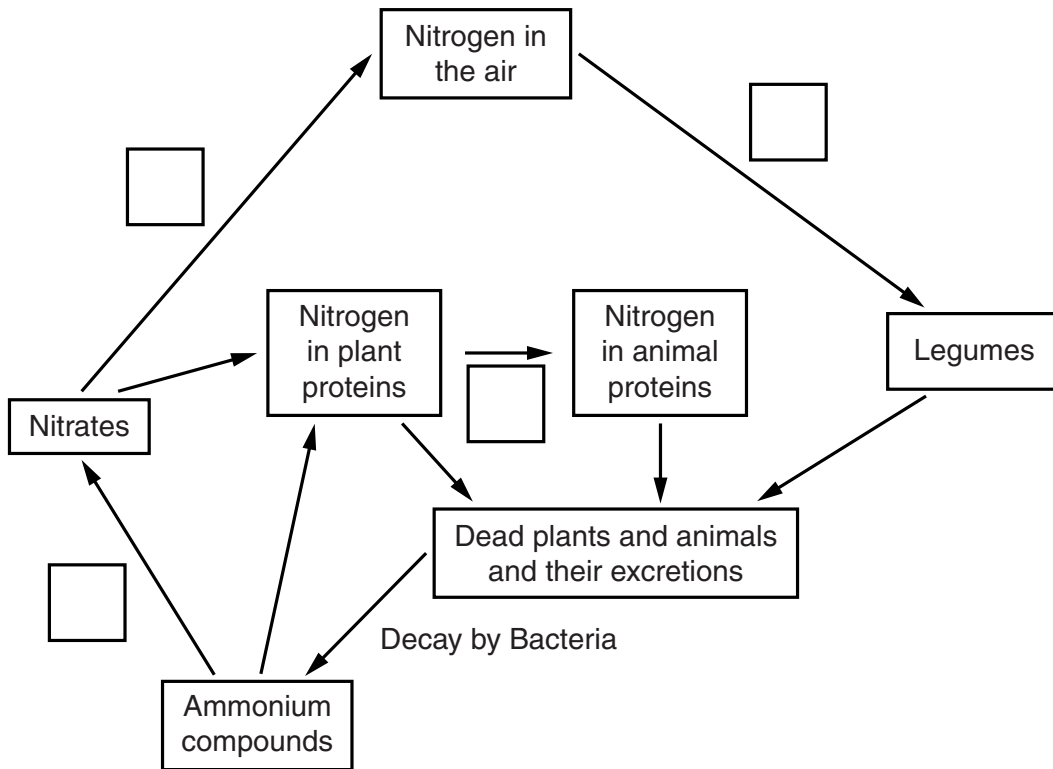
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(c) Explain how the lower numbers of earthworms in cultivated arable land might affect the soil structure during the growing season.

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..... [3]

[Total: 7]

11 The diagram shows part of the nitrogen cycle.



Put an **X** in a box on the diagram where **nitrification** occurs.

[1]

[Total: 1]

12 Some students are working on a school project.

They want to find out how many beetles there are in local woodland.

The teacher tells them that it would be best to take samples and make an estimate.

Give **two** reasons why it is better to take samples and make an estimate.

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..... [2]

[Total: 2]

13 Which **one** of the following is the **best** reason to control weeds in a crop of potatoes?

- A Weeds compete for water.
- B Weeds increase soil erosion.
- C Weeds look untidy.
- D Weeds poison the potatoes.

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

[Total: 1]

14 'Ethical food' is food that:

- is produced with minimum impact on the environment
- gives a fair price for the producers
- makes sure that any animals involved are well looked after.

A large supermarket investigates the sales of 'ethical food'.

Here are some of the results.

Category	Sales per year £m		
	2007	2008	2009
Organic	1982	1986	1704
Fairtrade	458	635	749
Eggs (free range)	314	419	447
Chicken (free range)	130	174	174
Farmers' markets	220	220	220
Sustainable fish	70	128	178

(a) Which category showed the largest increase in sales between 2007 and 2009?

..... [1]

(b) What is the percentage increase in sales of eggs (free range) between 2007 and 2009?

Answer % [1]

- (c) Describe the main trends in each of these results between 2007 and 2009 giving suggestions for these results.



The quality of written communication will be assessed in your answer.

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..... [6]

[Total: 8]

15 Georgie has been asked to mow (cut) an area of rough grass.

She decides to do a risk assessment first.

Describe the **stages** in her risk assessment.



The quality of written communication will be assessed in your answer.

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..... [6]

[Total: 6]

16 Coastlines are one example of a landscape.

They are formed by a range of natural processes.



Suggest how natural processes act to form coastlines.



The quality of written communication will be assessed in your answer.

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..... [6]

[Total: 6]

END OF QUESTION PAPER

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