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Monday 21 May 2012 – Morning

GCSE ENVIRONMENTAL AND LAND-BASED SCIENCE

B493/03 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)

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, 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.

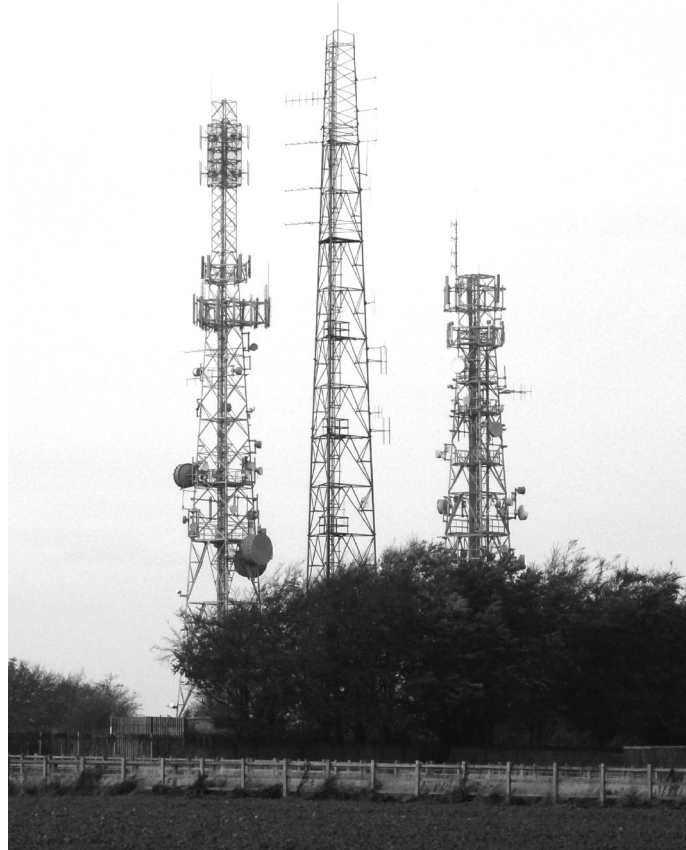
INFORMATION FOR CANDIDATES

- 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 **16** pages. Any blank pages are indicated.

For Examiner's Use	
TOTAL	

Answer **all** the questions.

1 The photograph shows some radio masts.



What type of pollution is caused by these masts?

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

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

2 Which **one** of these activities is most likely to cause **air** pollution?

- A burning rubbish on a bonfire
- B cutting grass with an electric mower
- C spraying a lawn with weed killer
- D spreading manure on a garden

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

3 The picture shows a modern tractor.



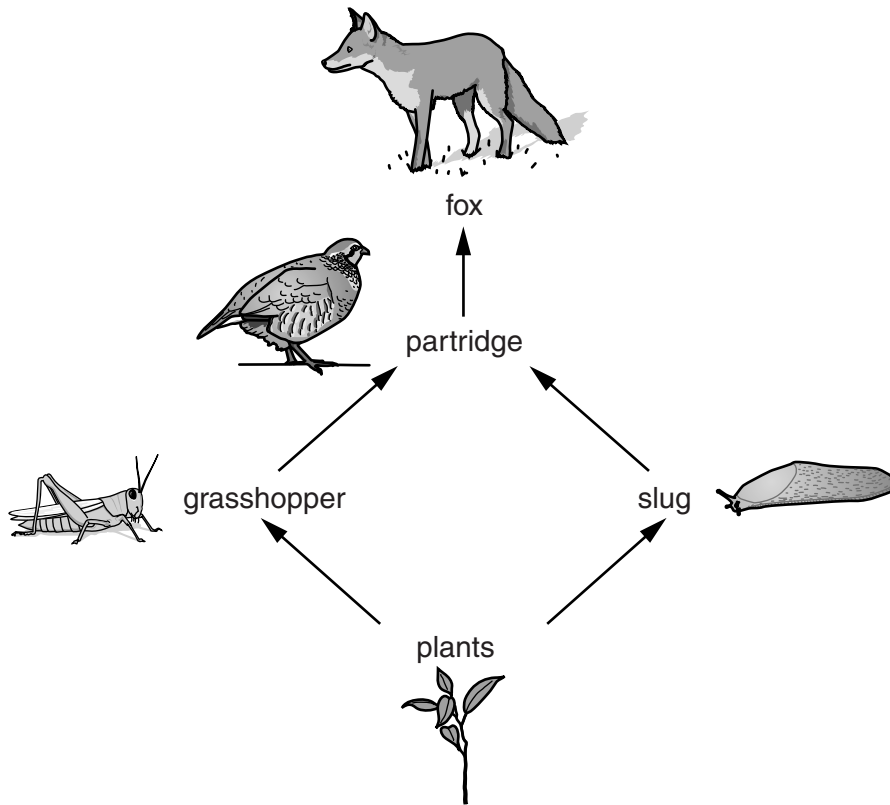
Machines used on farms can be very big and powerful.

What is an **advantage** of using larger and more powerful machines?

- A gateways need to be wider
- B more fuel is used up
- C soil is compacted so it drains well
- D work can be done more quickly

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

4 The diagram shows part of a farmland food web.



Look at the food web.

Draw a straight line to show **one** predator–prey relationship.

predator	prey
fox	fox
grasshopper	grasshopper
partridge	partridge
slug	slug

[2]

5 The amount of energy used in the UK is increasing year by year.

There may be an energy shortage because of this.

Which would be the most likely reason for this shortage?

- A Energy being produced in new ways.
- B People using more electrical equipment.
- C Power stations becoming more efficient.
- D Wind turbines being used to make electricity.

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

6 The photograph shows gardeners preparing to grow plants on an allotment.



They will grow different plants each year.

The plants grown each year are shown in the table.

year 1	year 2	year 3	year 4
sweet corn	peas	cabbages	parsnips
potatoes	beans	broccoli	carrots

(a) In which year are legumes planted?

Answer [1]

(b) Why do gardeners grow legumes?

- A to add nutrients
- B to decrease soil pH
- C to improve drainage
- D to remove toxins

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

7 Some chemicals are used by farmers to improve the yield of their crops.

If these chemicals are not used carefully they can cause harm.

Draw **three** lines to connect each **chemical** to the **harm it can cause**.

chemical

harm it can cause

fertiliser

builds up in food chains, so damaging predators

herbicide

causes excessive plant growth in streams and rivers, so reducing light levels

pesticide

kills some plants needed by animals, so reducing biodiversity

prevents sunlight reaching leaves, so reducing photosynthesis

[2]

8 The photograph shows chickens being farmed intensively.



One advantage of intensive farming is that it needs less land than extensive farming.

Give **two other** advantages of **intensive** farming.

1

.....

2

..... [2]

9 The photograph shows a barn owl.



Barn owls feed on small animals such as mice and voles.

Give **two** ways the barn owl is adapted for catching mice and voles.

- 1
- 2 [2]

10 Farmers can grow crops as **monoculture** or **mixed cultivation**.

(a) What is meant by **mixed cultivation**?

..... [1]

(b) Give **one** advantage of using mixed cultivation rather than monoculture.

..... [1]

11 The photograph shows soil being blown by the wind.



Suggest **two** ways that the farmer could reduce soil erosion by the wind.

- 1
-
- 2
- [2]

12 Weeds in a field can be controlled by using chemicals or by using cultural methods.

Suggest **two** advantages of using a chemical weed killer.

- 1
-
- 2
- [2]

13 Some students are asked to find the mass of water in a sample of soil.

They:

1. weigh an evaporating dish
2. put some soil in the evaporating dish and weigh the dish and soil
3. put the evaporating dish and soil into an oven at 60°C for two hours
4. reweigh the evaporating dish and soil
5. repeat steps 3 and 4 until the mass does not change
6. calculate the mass of water in the soil.

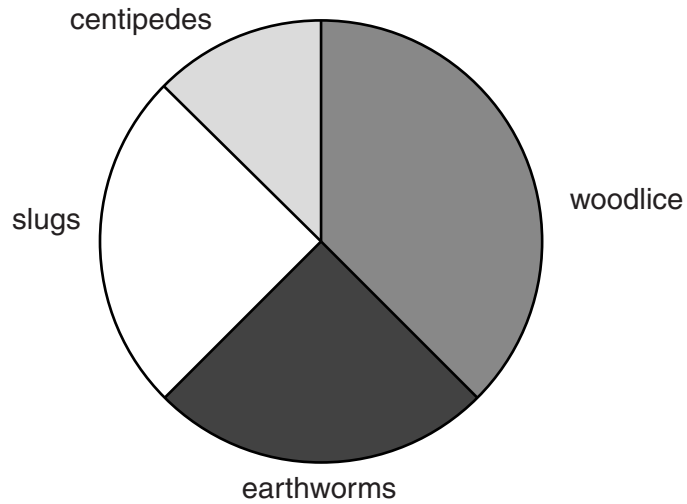
(a) Explain why step 5 is needed.

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

(b) How can the students calculate the mass of the water in the soil?

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

14 The pie chart shows the relative numbers of some animals in a garden.



Use the pie chart to answer the questions.

(a) Which animal was found in greatest numbers?

Put a tick (✓) in the box next to the correct answer.

- centipedes
- earthworms
- slugs
- woodlice

[1]

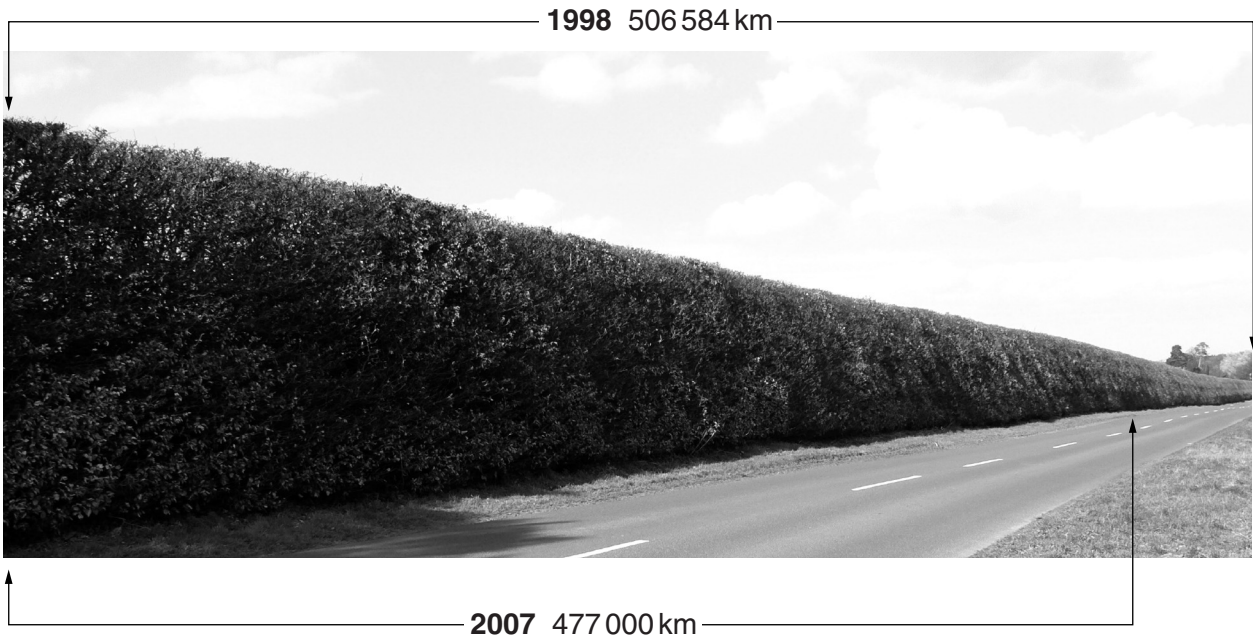
(b) Which **two** animals were found in equal numbers?

Put ticks (✓) in the boxes next to the correct answers.

- centipedes
- earthworms
- slugs
- woodlice

[1]

15 The picture represents the total length of managed hedgerows in the UK in 1998 and 2007.



(a) By how many km had the length of managed hedgerows decreased between 1998 and 2007?

Answer km [1]

(b) By what **percentage** had the length of managed hedgerows decreased between 1998 and 2007?

- A 0.58%
- B 5.8%
- C 58%
- D 94.2%

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

16 Acidic soils can be neutralised by putting lime on them.

The table shows the recommended amounts of lime (in tonnes per hectare) needed to grow crops in different soils.

soil pH	lime applied in tonnes per hectare			
	sandy loam		clay loam	
	arable	grass	arable	grass
7.0	0	0	0	0
6.5	3	0	4	0
6.0	6	2	8	3
5.5	9	5	12	6
5.0	12	7	16	7
4.5	15	7	20	7

(a) A farmer needed to apply 5 tonnes per hectare of lime to grow grass on a field of sandy loam.

What was the pH of the soil in this field?

Answer [1]

(b) A farmer is growing grass on a clay loam soil of pH 5.5 so needs to apply 6 tonnes per hectare of lime.

Describe **one** other situation from the table where the farmer needs to apply 6 tonnes per hectare of lime.

.....
 [1]

17 Fieldwork often needs a lot of equipment.

The photograph shows a teacher with some equipment she wants to take on a field trip.



Suggest **three** hazards she must be aware of when carrying equipment.

.....

.....

.....

..... [3]

18 Electricity can be generated from different sources.

These sources include:

water

wind

crops

Choose **one** of these sources.

source

Explain how it is used to generate electricity.

.....
.....
.....
..... [2]

19 A student wants to use ICT to monitor conditions in the school pond.

(a) List **two** environmental conditions that could be monitored.

1
2 [1]

(b) Explain how ICT can be used to monitor environmental conditions.

.....
.....
.....
..... [2]

END OF QUESTION PAPER



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