

Monday 11 June 2018 – Morning

GCSE ENVIRONMENTAL AND LAND-BASED SCIENCE

B681/02 Management of the Natural Environment (Higher Tier)

Candidates answer on the Question Paper.

OCR supplied materials:
None

Other materials required:

- Pencil
- Ruler (cm/mm)
- Calculator

Duration: 1 hour



Candidate forename						Candidate surname					
Centre number						Candidate number					

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. If additional space is required, you should use the lined page(s) at the end of this booklet. The question number(s) must be clearly shown.
- Do **not** write in the barcodes.

INFORMATION FOR CANDIDATES

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

2

Answer **all** the questions.

- 1 The UK has a variety of major ecosystems.

Each ecosystem has different characteristics.

Which description best describes the ecosystem of a **natural coniferous woodland** in the UK?

Put a tick (✓) in the box next to the best description.

cool temperatures, high rainfall

☐

cool temperatures, low rainfall

☐

high temperatures, high rainfall

☐

high temperatures, low rainfall

☐

[1]

[Total: 1]

3

- 2 A farmer is building a dry stone wall to replace a barbed wire fence.



Suggest the benefits this might have for the farm.

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.....

.....

.....

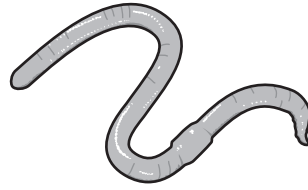
..... [3]

[Total: 3]

4

- 3 Earthworms are organisms that live in the soil.

Earthworms get nutrients from the soil.



Which **two** of the following do earthworms also need?

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

Light	<input type="checkbox"/>
Loam	<input type="checkbox"/>
Moisture	<input type="checkbox"/>
Oxygen	<input type="checkbox"/>
Tunnels	<input type="checkbox"/>

[2]

[Total: 2]

- 4 The pH of the soil will affect how well plants grow.

State **one** way a farmer can change the pH of the soil.

..... [1]

[Total: 1]

5

- 5 This pasture has poor drainage due to compaction by heavy farm vehicles.



The farmer wants to repair the damage to the pasture.

State **two** practical ways this damage could be repaired.

.....

.....

..... [2]

[Total: 2]

7

7 Leakage from faulty taps is wasteful and expensive.

A farm management book gives this information.

Leakage from tap	Flow rate in litres per min	Annual cost in £
One drip per second	0.003	< 2
Drip breaking in to a stream	0.063	33
A stream of 1.5 mm width	0.222	117
A stream of 3 mm width	0.684
A stream of 6 mm width	2.430	1277

Write the missing data in the table.

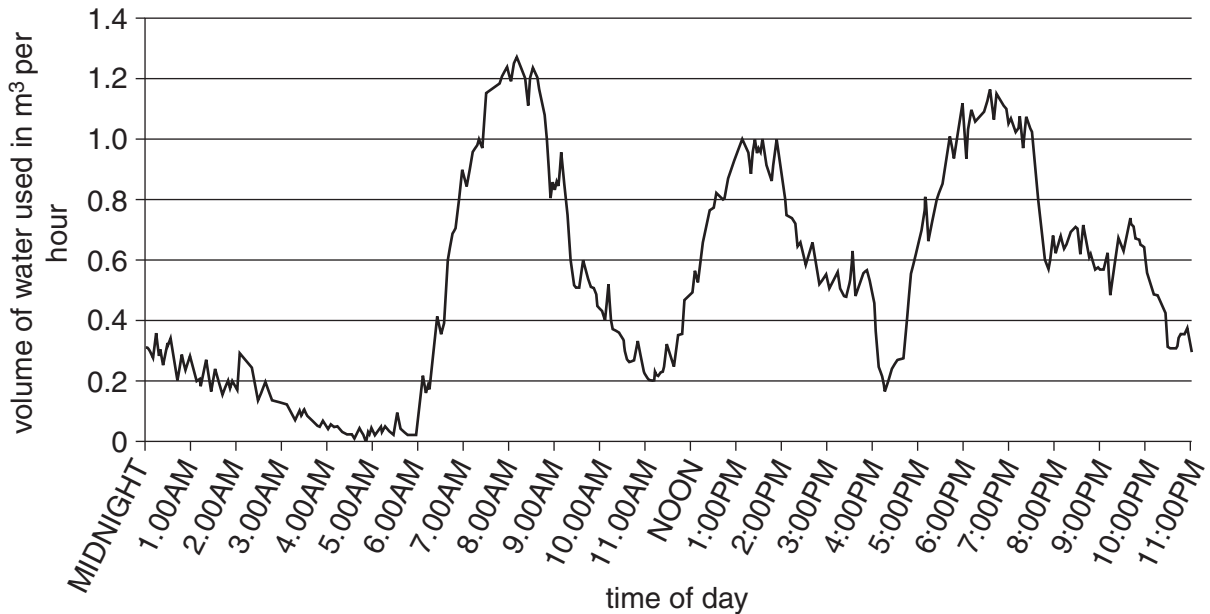
[1]

[Total: 1]

8

- 8 A dairy farmer carried out an assessment of water use on the farm over one month.

The average daily use of water is shown below.



- (a) The farmer concluded that there were no water leaks on the farm.

How does the data support this conclusion?

.....
 [1]

- (b) The peak water consumption is at 8.00 am.

Suggest reasons for this peak.

.....

 [3]

[Total: 4]

9

- 9 There are a number of benefits of using ICT on a farm.

One of the benefits of using ICT on a farm is to save money.

Identify **two** other ways in which ICT may improve the 'quality of life' for the farm manager.

.....

.....

.....

..... [2]

[Total: 2]

10

10 The Oak Processionary Moth is an introduced species.

Large numbers of these moths were reported in a city where they were damaging trees in parks and streets.

The caterpillars of these moths often cluster together in silky nests.

Estimates were made of the numbers of nests of these caterpillars.

Year	2008	2009	2010	2011	2012	2013
Estimated numbers of nests	500	1050	2450	2175	4400	

- (a) Using the formula below, calculate the percentage increase in the estimated number of nests between 2008 and 2012.

$$\text{Percentage increase} = \frac{\text{increase in number}}{\text{starting number}} \times 100$$

Answer [1]

- (b) The number of nests decreased in 2011.

Suggest **two** possible reasons for this decrease.

.....

 [2]

- (c) Suggest **two** possible reasons for the trend shown in the table.

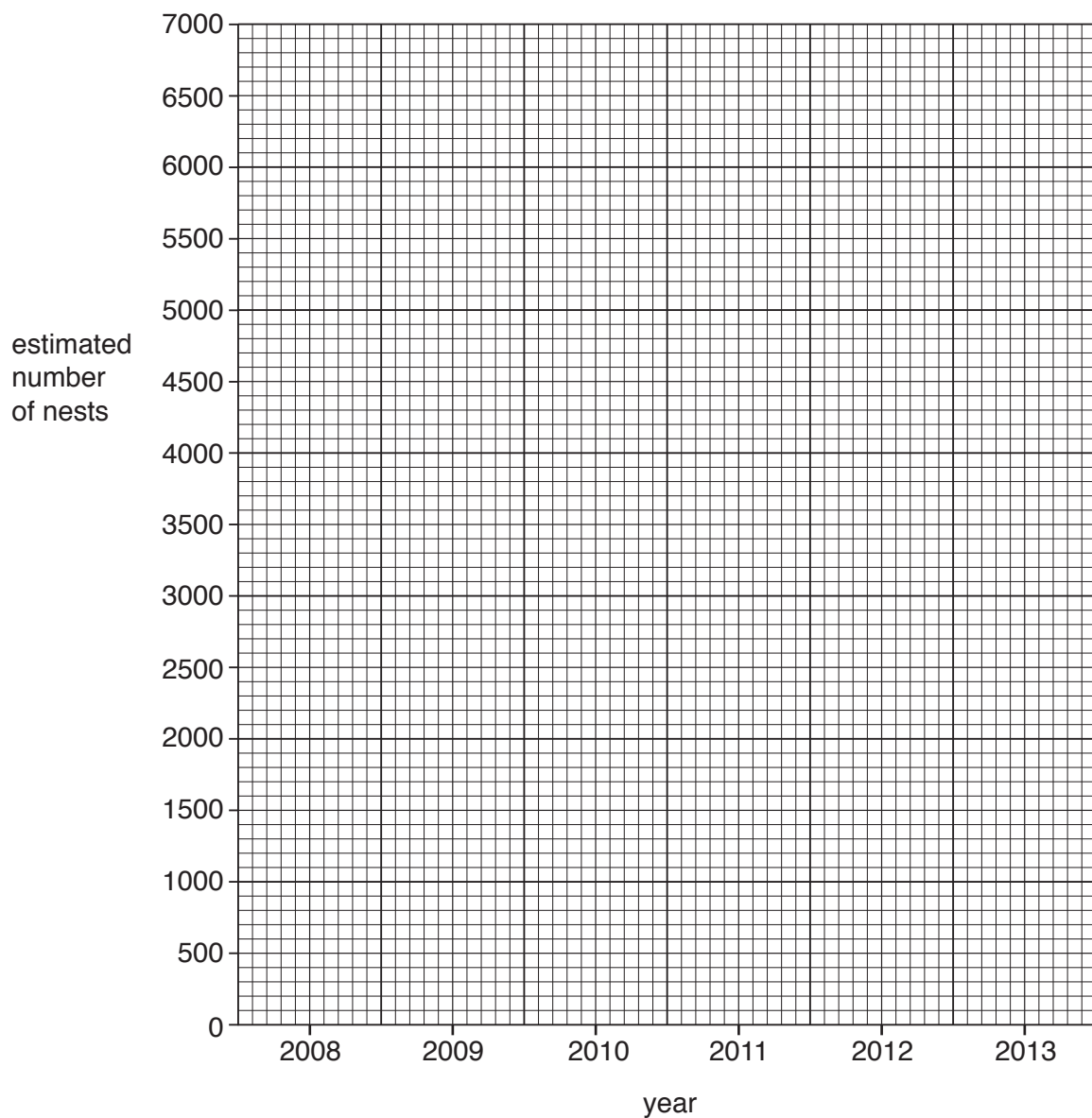
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 [2]

11

(d) Plot the data shown in the table (page 10) on the graph below.

[2]



(e) Extend the line you have drawn to show the estimated number of nests in 2013.

estimated number of nests in 2013 [1]

[Total: 8]

- 11 Scientists evaluated the effect of four different pesticides that are used to kill snails on crops.

The results are shown below:

Pesticide	Percentages of snails killed by the pesticide in each crop				
	Peas	Corn	Cabbages	Grapes	Carrots
Aluminium sulfate	72	68	65	86	74
Iron phosphate	86	97	90	83	88
Metaldehyde	60	85	68	93	53
Methiocarb	65	75	65	84	79

- (a) What is the mean percentage of snails killed by iron phosphate for all these crops?

Answer [1]

- (b) The scientists have not collected data for the effectiveness of iron phosphate as a snail killer on beans.

Make a prediction for its effectiveness and give a reason for your answer.

.....

 [2]

- (c) Many people think that iron phosphate is the most 'environmentally friendly' of the four pesticides but it is not always the one used.

Suggest **two** reasons why another of the pesticides might be used instead.

.....

 [2]

[Total: 5]

13

12 A chemical company in the UK is planning to release a new herbicide.

They have tested it in **controlled** conditions in a glasshouse.

The company now need to extend their testing in **uncontrolled** conditions.

Suggest what they will need to consider before they start.



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

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..... [6]

[Total: 6]

- 13** The Environment Stewardship Scheme gives payments to farmers and land owners for operating good environmental practice.

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<http://publications.naturalengland.org.uk/publication/2798159>

Describe **three** examples of good practice for which farmers could receive payments under this scheme.

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..... [3]

[Total: 3]

