

**Friday 16 June 2017 – Morning**

**GCSE ENVIRONMENTAL AND LAND-BASED SCIENCE**

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

Candidates answer on the Question Paper.

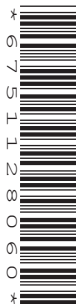
**OCR supplied materials:**

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 Wasps are common insects across the UK.  
They have adapted to take advantage of a range of habitats.



Which characteristic will enable wasps to survive in a range of habitats?

The wasp

- A has long wings
- B does not contain blood
- C eats a wide range of food
- D has good hearing

Choose **A, B, C** or **D** ..... [1]

[Total: 1]

**3**

- 2** Scientists monitor the size of mammal populations.  
They notice that numbers are affected by the average (mean) winter temperature.

Give **three** reasons why a cold winter might reduce the numbers of a mammal.

1 .....

.....

2 .....

.....

3 .....

.....

**[3]**

**[Total: 3]**

4

- 3 (a) A commercial orchard is an example of an **artificial** ecosystem.

Why might the biodiversity of an artificial ecosystem be lower than in a natural ecosystem?

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

- (b) A commercial orchard is a form of intensive production.

Give **three** environmental disadvantages of this intensive production.

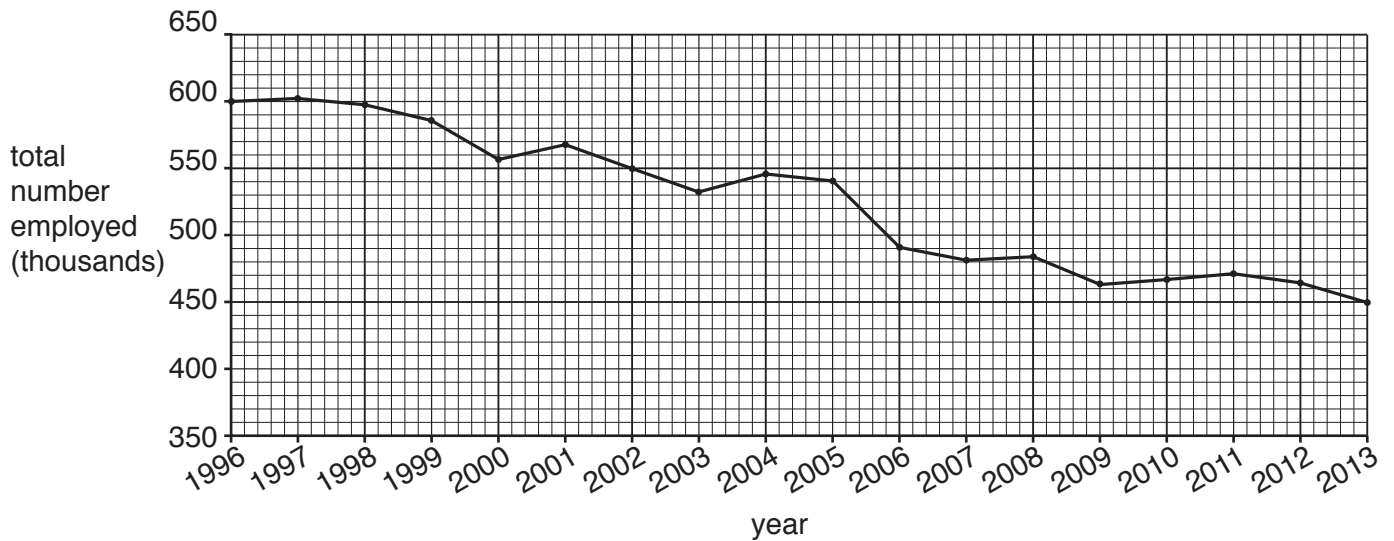
1 .....  
.....  
2 .....  
.....  
3 .....  
.....  
[3]

[Total: 4]

5

- 4 The graph shows the total number of people employed on farms in the UK between 1996 and 2013.

**Total farm employment 1996–2013**



- (a) Describe the trend in employment on farms in the UK between 1996 and 2013.

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

- (b) Calculate the percentage change in the number of people employed in farming between 1996 and 2013.

Show your working.

percentage change = ..... % [2]

- (c)** Official data shows that between 1996 and 2013 there was a slight increase in the amount of production (yield) on UK farms.

Explain how changes on farms might have made this possible.



*The quality of written communication will be assessed in your answer to the question.*

[6]

**[Total: 9]**

- 5 The table shows an estimate of water use by industry in England and Wales over a year.

Industry	Mains water supply (million m <sup>3</sup> )	Natural water sources (million m <sup>3</sup> )	Total water used (million m <sup>3</sup> )
Agriculture, fishing and farming	149	1351	1500
Energy	28	3672	
Education and health	176	24	200
Food, drink and tobacco	122	98	220
Hotels and restaurants	137	3	140
Commercial and public services	311	49	360
Other	352	1028	1380
<b>Total</b>	<b>1275</b>	<b>6225</b>	<b>7500</b>

- (a) Complete the missing total for total water used for 'energy' in the table above. [1]

- (b) The agriculture, fishing and farming industries are large users of water.

What proportion of the total do they use?

Circle the correct answer below.

5%                      15%                      20%                      1500%                      [1]

8

(c) Suggest **two** different ways that large amounts of water are used on a dairy farm.

1 .....

2 .....

[2]

(d) Greenhouse crops such as tomatoes need large amounts of water.

Water can be obtained from a variety of sources.

Describe the ways a grower could obtain water of a suitable quality for their crops.



*The quality of written communication will be assessed in your answer to the question.*

.....

.....

.....

.....

.....

.....

.....

.....

.....

..... [6]

[Total: 10]



**6** Working in agriculture can be dangerous.

It is important to identify hazards and minimise the risks.

List **four** things that should be considered when planning to move sheep safely into a new field.

1 .....

.....

2 .....

.....

3 .....

.....

4 .....

.....

[4]

[Total: 4]

10

- 7 The government is investing in alternative ways of generating electricity.

For each of the following energy sources, name **one** method that could be used to generate electrical energy.

Energy source	Method
Wind	
Water	
Sun	
Crops	

[4]

[Total: 4]

```
graph BT; Willow[Willow] --> Scale_insect[Scale insect]; Willow --> Caterpillar[Caterpillar]; Willow --> Woolly_aphid[Woolly aphid]; Scale_insect --> Parasitic_wasp[Parasitic wasp]; Caterpillar --> Blue_tit[Blue tit]; Woolly_aphid --> Ladybird[Ladybird]; Blue_tit --> Hawk[Hawk];
```

Describe how each part of the food web would be affected and explain why.



[6]

12

(b) Experts are concerned about the decrease in numbers of birds such as blue tits.

Which **one** of the following conservation bodies is most likely to keep a record of bird numbers?

- A** National Trust
- B** Natural England
- C** RBST
- D** RSPB

Choose **A, B, C** or **D** ..... [1]

[Total: 7]

13

- 9 Some students investigate the properties of soil in a field.

They test the soil pH.

The results are shown below:

Student	A	B	C	D	E	F	G	H
Soil pH	6.4	6.3	6.4	7.2	5.9	6.0	6.4	6.6

- (a) What is the range of pH?

..... [1]

- (b) Calculate the mean of these results.

..... [1]

- (c) The students suspect one of these results is anomalous (inaccurate) and decide to leave it out of their calculations.

- (i) Which result should they leave out?

..... [1]

- (ii) Calculate the **new** mean pH.

..... [1]

- (d) The students read that the crops they plan to grow need a neutral soil.

What would be the most effective way of making the pH of this soil neutral?

..... [1]

[Total: 5]

14

10 Here are some of the common terms for different cultivation methods.

Inorganic cultivation
Mixed cultivation
Monoculture
Organic production
Genetically Modified production

Choose the term which best fits each of these descriptions:

The same crop type is grown each year .....

The crops are only given farm yard manure (FYM) .....

The varieties used have been artificially created in a laboratory .....

[3]

[Total: 3]

**END OF QUESTION PAPER**



[illegible]

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