

**OXFORD CAMBRIDGE AND RSA EXAMINATIONS**  
**GCSE**  
**B681/02**  
**ENVIRONMENTAL AND LAND-BASED**  
**SCIENCE**

**Management of the Natural  
Environment (Higher Tier)**

**FRIDAY 17 JUNE 2016: Morning**  
**DURATION: 1 hour**  
**plus your additional time allowance**  
**MODIFIED ENLARGED**

<b>Candidate forename</b>		<b>Candidate surname</b>	
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<b>Centre number</b>						<b>Candidate number</b>				
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**Candidates answer on the Question Paper.**

**OCR SUPPLIED MATERIALS:**

**None**

**OTHER MATERIALS REQUIRED:**

**Pencil**

**Ruler (cm/mm)**

**Calculator**

**READ INSTRUCTIONS OVERLEAF**



## **INSTRUCTIONS TO CANDIDATES**

**Write your name, centre number and candidate number in the boxes on the first page. 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).**

## **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.**

**Any blank pages are indicated.**

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**Answer ALL the questions.**

**1 Earthworms are a common organism found in soils.**

**Which TWO of the following does the earthworm need to survive?**

**Tick the TWO correct boxes.**

- |          |                 |                          |
|----------|-----------------|--------------------------|
| <b>A</b> | <b>air</b>      | <input type="checkbox"/> |
| <b>B</b> | <b>clay</b>     | <input type="checkbox"/> |
| <b>C</b> | <b>light</b>    | <input type="checkbox"/> |
| <b>D</b> | <b>lime</b>     | <input type="checkbox"/> |
| <b>E</b> | <b>moisture</b> | <input type="checkbox"/> |

**[1]**

**2 ICT is increasingly being used to monitor and record environmental conditions.**

**Give THREE advantages of using ICT rather than manual methods.**

**1** \_\_\_\_\_

\_\_\_\_\_

**2** \_\_\_\_\_

\_\_\_\_\_

**3** \_\_\_\_\_

\_\_\_\_\_

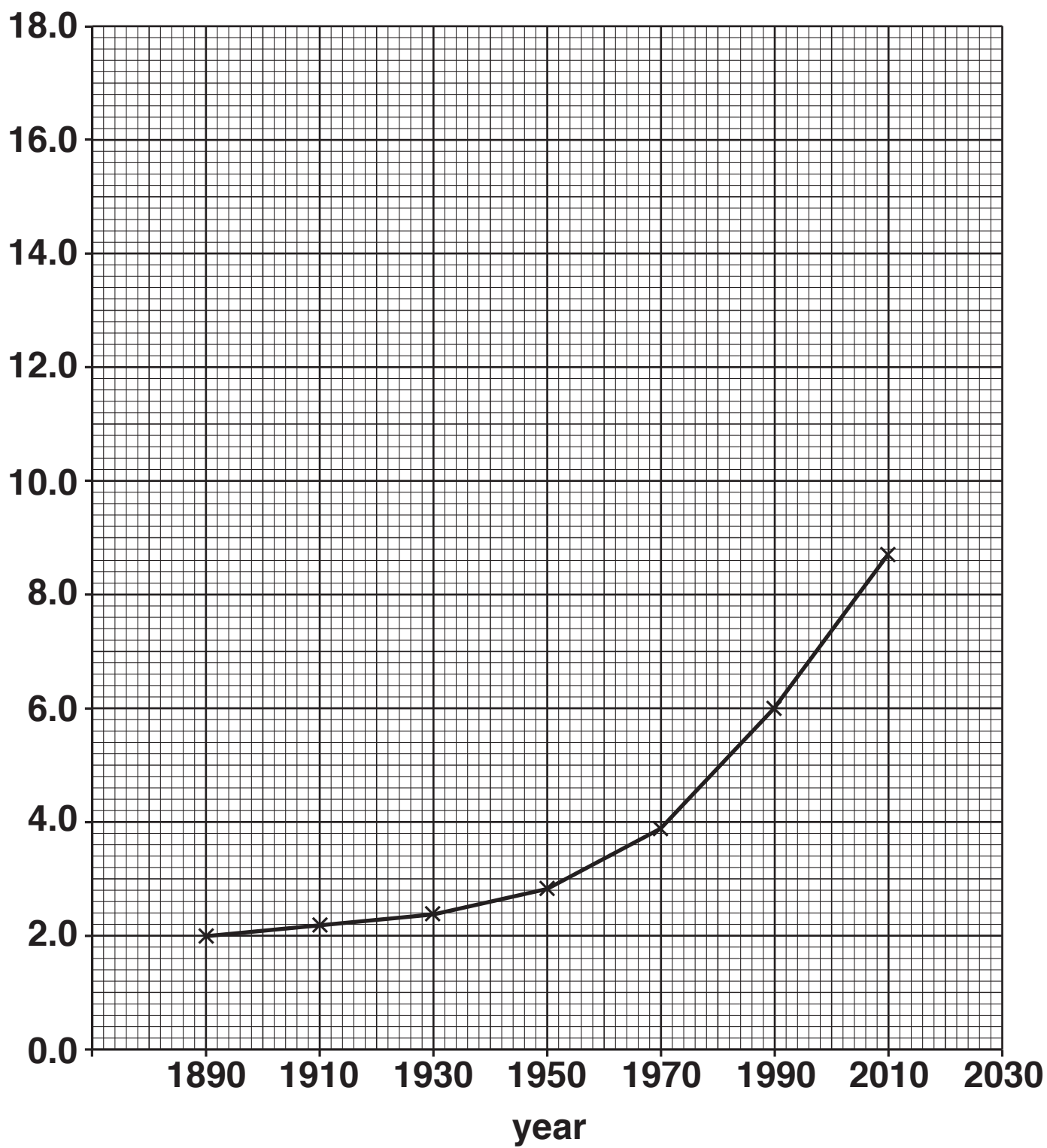
**[3]**

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- 3 The table shows the mean (average) yield of wheat in the UK.**

<b>YEAR</b>	<b>YIELD OF WHEAT (TONNES PER HECTARE)</b>
<b>1890</b>	<b>2.0</b>
<b>1910</b>	<b>2.2</b>
<b>1930</b>	<b>2.4</b>
<b>1950</b>	<b>2.8</b>
<b>1970</b>	<b>3.9</b>
<b>1990</b>	<b>6.0</b>
<b>2010</b>	<b>8.7</b>

yield  
of wheat  
(tonnes per  
hectare)



- (a) (i) Use the graph opposite to predict the yield of wheat for 2030.

predicted yield in 2030 = \_\_\_\_\_ tonnes per hectare [1]

- (ii) Suggest THREE reasons for the large increase in wheat yield in the UK.

Reason 1 \_\_\_\_\_

\_\_\_\_\_

Reason 2 \_\_\_\_\_

\_\_\_\_\_

Reason 3 \_\_\_\_\_

\_\_\_\_\_

[3]

- (b) In 2010, experts stated that the mean yield of wheat across the world was only 33.3% of that of the UK.

Calculate the mean yield of wheat across the world in 2010.

mean yield = \_\_\_\_\_ tonnes per hectare [1]

- (c) Some experts think that we need to increase wheat yield to meet the demands for wheat in the next 30 years.**

**Give TWO ways a genetically modified (GM) crop might help to meet this increased demand.**

**1** \_\_\_\_\_

\_\_\_\_\_

**2** \_\_\_\_\_

\_\_\_\_\_

**[2]**

- 4 Organic growers use a variety of techniques to control weeds.**

**Which ONE of the following are they LEAST likely to use?**

- A black polythene**
- B herbicides**
- C hoeing**
- D mulching**

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

- 5 Water capture systems such as reservoirs are becoming increasingly common on farms and horticultural businesses.**

**Suggest TWO reasons why an owner or manager might consider this to be a worthwhile investment.**

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**[2]**

**6 A builder submits plans for a new housing estate.**

**The planning officers agree to these plans but insist that the builder also plants trees in the new housing estate.**

**Describe the benefits of planting trees in the new housing estate.**



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

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**[6]**

- 7 The RSPB (Royal Society for the Protection of Birds), Natural England and the RBST (Rare Breeds Survival Trust) are examples of conservation organisations.**

**Use examples from a conservation organisation that you have studied to show how conservation differs from preservation.**

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**[3]**

- 8 The land-based industries have some of the highest accident and fatality rates of all industries in the UK.**

**Give reasons why this might be the case AND suggest how the sector can address these issues.**



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

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**[6]**

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- 9 A survey took place on the condition of SSSIs (Sites of Special Scientific Interest) in England.**

**How this survey rated the status of the sites is given in the table opposite.**

- (a) (i) Calculate the area of the SSSIs NOT rated as good or improving.**

\_\_\_\_\_ ha [1]

- (ii) Using your answer to (i), calculate the percentage of the total SSSI area that this represents.**

**Show your working.**

\_\_\_\_\_ % [2]

<b>Status of SSSI</b>	<b>Good</b>	<b>Poor – improving</b>	<b>Poor – no change</b>	<b>Poor – getting worse</b>	<b>Partially destroyed</b>	<b>Destroyed</b>
<b>Area (ha)</b>	<b>1 038 639</b>	<b>407 578</b>	<b>631 061</b>	<b>26 111</b>	<b>17 894</b>	<b>143</b>

**(b) What do the information in the table and your calculations suggest about the condition of English SSSIs?**

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**[2]**

**10 A holiday park company has purchased some land containing a disused quarry and some mature woodland.**

**The company intends to develop a holiday park containing log cabins, and sports and leisure facilities on the site.**

**Local protestors are against the plan as it would affect local habitats.**

**In the table below, give TWO ways this development might damage local habitats.**

**Suggest TWO methods to reduce this damage.**

<b>DAMAGE TO LOCAL HABITAT</b>	<b>METHOD TO REDUCE DAMAGE</b>

**[4]**

- 11 A farmer has a tool to measure the height of grass (sward) in a field.  
This helps the farmer to decide when to move livestock between fields.**

**Describe the impacts on a field if the farmer did not move the livestock at the correct time.**

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**[3]**

**12 A farm has recently been sold. The land had previously been managed using a crop rotation system that included legumes.**

**The new owners have decided to manage the land differently. They will use a monoculture but do nothing else to improve the soil.**

**Describe the impact their decision may have on a crop immediately and in future years.**

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**[3]**

**13 Many countries, including the UK, are facing potential energy shortages in the future as fossil fuels run out.**

**Describe, with specific examples, how the land-based industries might help to meet future energy needs.**



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

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[6]

**END OF QUESTION PAPER**

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