

OXFORD CAMBRIDGE AND RSA EXAMINATIONS
GCSE
B681/01
ENVIRONMENTAL AND LAND-BASED
SCIENCE

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

MONDAY 11 JUNE 2018: Morning

DURATION: 1 hour
plus your additional time allowance

MODIFIED ENLARGED

Candidate forename		Candidate surname	
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Centre number						Candidate number				
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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 front 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. 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.

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.

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Answer ALL the questions.

1 A farmer wants to build a dry stone wall on a farm.



Put ticks (✓) in the boxes next to the TWO best reasons for building a dry stone wall. [2]

Cheaper than a barbed wire fence.

☐

Makes use of natural resources.

☐

Can be built quickly.

☐

Will last a long time.

☐

Requires no skill to build.

☐

[TOTAL: 2]

2 Legumes are plants that have roots with swellings called nodules.

These nodules contain bacteria.

The bacteria turn nitrogen in the air into a nutrient that plants can use.

This process is known as:

A decay

B eutrophication

C fixation

D neutralisation

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

[TOTAL: 1]

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. [2]

Light ☐

Loam ☐

Moisture ☐

Oxygen ☐

Tunnels ☐

[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 Production systems for animals in the UK may be either extensive or intensive.**

Both systems have advantages and disadvantages.

For an animal you have studied, describe the ENVIRONMENTAL advantages and disadvantages of keeping this animal in an extensive system compared to an intensive system.



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

[6]

[TOTAL: 6]

- 6 Students are working on a project to save water on the school farm.**

They investigate how much water could be collected from the roof of each farm building.

All the buildings have a flat roof.

They measure the size of each roof.

Look at the table below.

Name of farm building	Dimensions in metres
Animal house	109 × 30
Milking parlour	48 × 22
Shed	18 × 90

- (a) Calculate the TOTAL roof area of the farm buildings.**

Show your working.

Answer _____ m² [2]

(b) A new barn is built with a roof area of 2000 m^2 .

The annual rainfall on the farm is 0.75 m .

What is the volume of water that could be collected from this roof each year?

Put a ring around the correct answer. [1]

750 m^3

1500 m^3

2667 m^3

7500 m^3

- (c) The students calculate that they could collect 6000 m^3 of rainwater each year from all the farm buildings.**

The water could be stored in a reservoir on the farm.

It would cost £4800 to build a reservoir.

With a reservoir, they would not have to buy 6000 m^3 of water from the water company.

The water company charges the school farm 80p per m^3 for water it supplies.

How long would it take to save the cost of building a reservoir?

Show your working.

[2]

- (d) The school decides to build a reservoir to collect and store rainwater.**

Suggest FOUR things this water could be used for without needing extra treatment.

[2]

[TOTAL: 7]

- 7 The Rare Breeds Survival Trust (RBST) surveys the numbers of rare breeds each year.**

The trust classifies the status of rare breeds.

Some of the categories are shown below:

Category	Cattle	Goats	Pigs	Sheep
1. Critical	Less than 150	Less than 100	Less than 100	Less than 300
2. Endangered	150–250	100–200	100–200	300–500
3. Vulnerable	250–450	200–300	200–300	500–900
4. At Risk	450–750	300–500	300–500	900–1500
5. Minority	750–1500	500–1000	500–1000	1500–3000

- (a) What is the minimum number of pigs for a breed to be considered as ‘Endangered’?**

_____ **[1]**

- (b) A breed of goat is estimated to have 140 animals.**

The breeders want to increase the numbers of this breed by 200%.

What category will the breed be placed in if they are successful?

_____ **[1]**

(c) Suggest FOUR ways that the breeders could increase the numbers of this breed of goat.

[4]

[TOTAL: 6]

8 Snails are common pests of crops.



State TWO adaptations of the snail.

Explain how each adaptation makes the snail a successful crop pest.

Adaptation 1 _____

Explanation _____

Adaptation 2 _____

Explanation _____

_____ [4]

[TOTAL: 4]

- 9 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 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) Which pesticide was the most effective?

_____ [1]

- (b) What is the mean percentage of snails killed in the carrot crop?

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]

10 Pesticides must be stored securely.

Suggest THREE different hazards if pesticides are NOT stored securely.

[3]

[TOTAL: 3]

11 The land-based industries can use a range of alternative energy sources to help meet their energy needs.

Describe the different ways they can do this.



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

[6]

[TOTAL: 6]

12 What is the main purpose of the Environmental Stewardship scheme?

Put a tick (✓) in the box next to the correct statement.
[1]

To fund farmers to manage the land in certain ways. ☐

To promote recycling of old farm machinery. ☐

To reduce the amount of CO₂ emitted by vehicles. ☐

To stop the development of new houses on green belt land. ☐

[TOTAL: 1]

13 Farmers spend a lot of time controlling weeds in their crops.

Weeds can reduce both the growth and the value of food crops.

Explain how weeds reduce growth and value, and how farmers can control weeds.



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

[6]

[TOTAL: 6]

END OF QUESTION PAPER

ADDITIONAL ANSWER SPACE

If additional space is required, you should use the following lined page(s). The question number(s) must be clearly shown in the margin(s).



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