

**GENERAL CERTIFICATE OF SECONDARY EDUCATION**  
**ENVIRONMENTAL AND LAND-BASED SCIENCE**  
Management of the Natural Environment (Higher Tier)

**B493/02**



Candidates answer on the question paper.

**OCR supplied materials:**

None

**Other materials required:**

- Electronic calculator
- Pencil
- Ruler (cm/mm)

**Wednesday 25 May 2011**  
**Morning**

**Duration: 45 minutes**



Candidate forename		Candidate surname	
-----------------------	--	----------------------	--

Centre number						Candidate number				
---------------	--	--	--	--	--	------------------	--	--	--	--

**MODIFIED LANGUAGE**

**INSTRUCTIONS TO CANDIDATES**

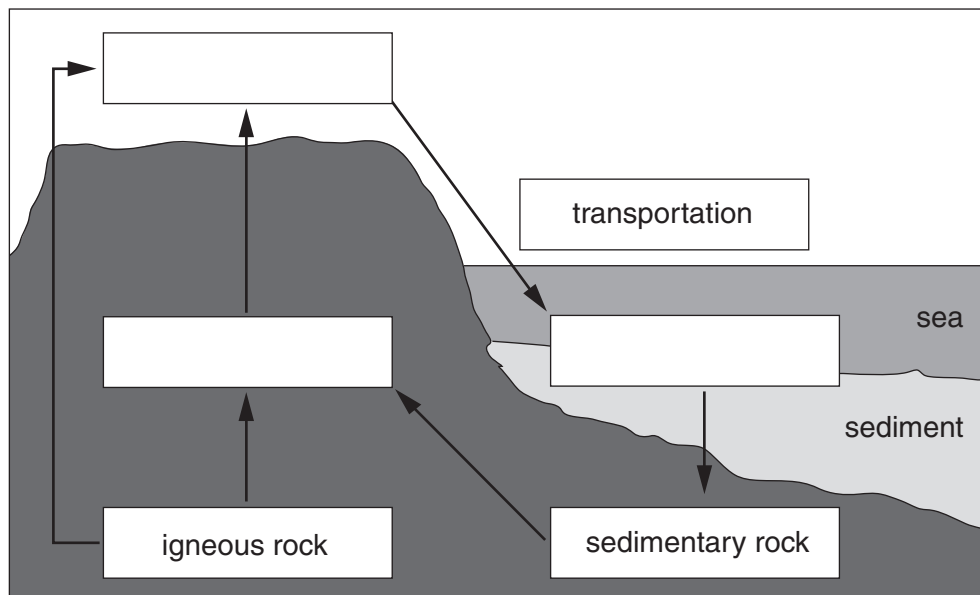
- Write your name, centre number and candidate number in the boxes above. Please write clearly and in capital letters.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- Write your answer 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).
- Answer **all** the questions.
- 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.

Answer **all** the questions.

1 This diagram shows a simplified version of the rock cycle.



Write the **two** labels in the correct spaces on the diagram.

**deposition**

**erosion**

[2]

2 A farmer tests the pH of the soil in five different fields.

The table shows the results.

field	pH of soil
A	5
B	6
C	7
D	8
E	9

Cabbages grow better in slightly acidic soil.

(a) In which field, **A**, **B**, **C**, **D** or **E**, would the cabbages grow best?

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

(b) The farmer wants to make a field more alkaline.

Which one of the following should he add to the soil?

Put a (ring) around the correct answer.

compost

farmyard manure

green manure

lime

nitrate fertiliser

[1]

3 Below are descriptions of two food chains.

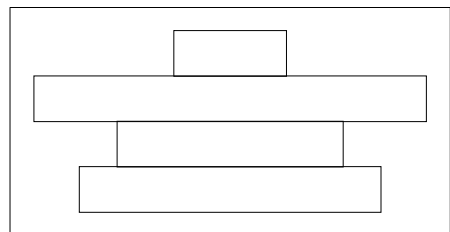
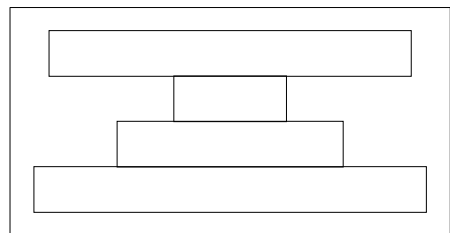
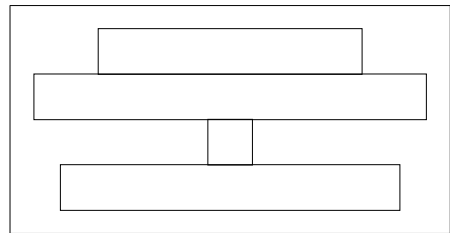
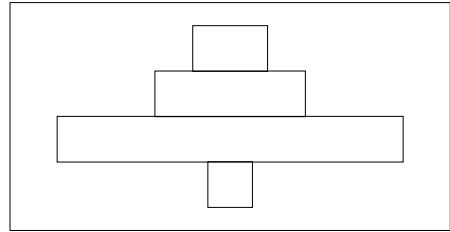
Draw a straight line to join each **description of a food chain** to its correct **pyramid of numbers**.

**description of food chain**

**pyramid of numbers**

Caterpillars feed on tree leaves.  
 Small birds feed on caterpillars.  
 Hawks eat small birds.

Rabbits feed on grass.  
 Foxes feed on rabbits.  
 Fleas on foxes suck their blood.



[2]

4 Farmers need to control weeds.

They can use three different methods:

- cultural control
- chemical control
- organic control

In the list below put **rings** around **two** examples of cultural weed control.

**grafting**

**layering**

**mulching**

**spraying**

**black polythene**

[2]

5 Intensive farming of crops can give high yields.

However, the use of intensive methods can cause problems.

Which of the following is **not** a problem of growing crops intensively?

- A** expensive to set up
- B** high energy input is needed for fertiliser production
- C** natural predators are reduced
- D** organic content of the soil is high

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

6 The photograph shows a rocky shore that a teacher wants to use for fieldwork.



Doing any fieldwork can be hazardous.

Some of the hazards can come from aggressive animals or poisonous plants.

Describe and explain **two** other hazards in fieldwork.

.....

.....

.....

..... [2]

7 (a) Which soil type has the following characteristics?

- water runs through it quickly
- it feels gritty to the touch
- there is no swelling or shrinkage
- has the largest mineral particle size

..... [1]

(b) Give **one** other characteristic of this type of soil.

.....

..... [1]

8 The Countryside and Rights of Way Act gives the public access to large areas of ‘open country’ (‘the right to roam’).

The Act does not include private areas like people’s gardens.

Suggest **two** other areas where you have no ‘right to roam’.

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

9 The photograph shows two greenhouses.



A greenhouse is a controlled environment.

(a) Name **two** environmental conditions that are controlled in a greenhouse.

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

(b) Explain how ICT can be used to control **one** of the environmental conditions given in (a).

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

10 The photograph shows a nuclear power station.



Alternative energy sources are seen as environmentally friendly.

Many people think that nuclear power is not.

However, new nuclear power stations are planned.

Give **two** arguments that support the building of new nuclear power stations.

.....

.....

.....

..... [2]



11 The photograph shows a field being sprayed with pesticide.



Using pesticides can improve crop yield but they may have a harmful effect on the environment.

Farmers can reduce the harmful effect by using the sprays carefully.

Give **two** ways farmers can use pesticides but reduce any harmful effect on the environment.

.....

.....

.....

..... [2]

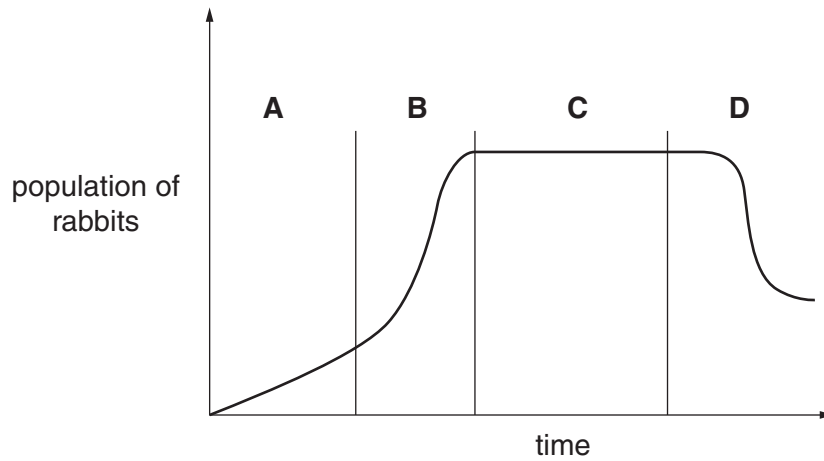
12 Preservation is similar to conservation but with one important difference.

Explain how **preservation** is different from **conservation**.

.....

..... [1]

13 The graph shows how the population of rabbits in a field changed over a period of time.



(a) At which time interval, **A**, **B**, **C** or **D**, did the rabbit population increase the fastest?

..... [1]

(b) What does part **C** tell you about the birth and death rate of the rabbits?

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

14 Researchers investigated the number of earthworms in fields growing different crops.

The table shows their results.

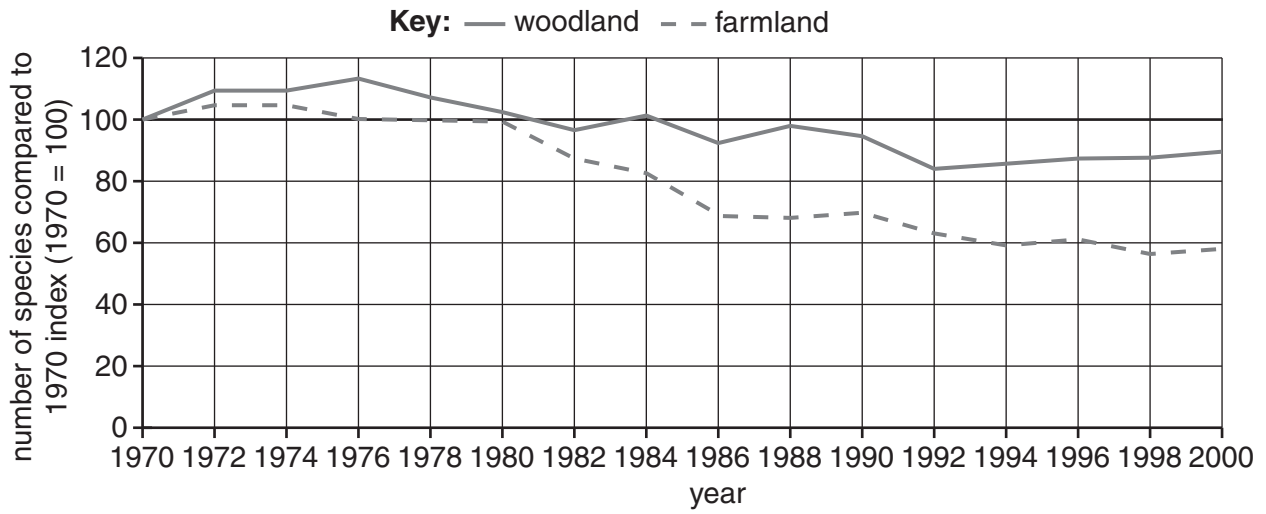
crop	worms / m <sup>2</sup>
clover	1080
pasture	810
soya	155
wheat	27

How many worms would there be in a plot of clover that was 5 metres long and 2 metres wide?

..... [1]

15

**change in number of bird species in farmland and woodland  
1970 to 2000**



The graph shows how the number of species of birds in farmland and woodland has changed between 1970 and 2000.

**(a)** During which (two year) period did the population of farmland species show the greatest decrease?

..... [1]

**(b)** Describe in detail how the relationship between woodland species and farmland species has changed between 1970 and 2000.

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

16 The photograph shows an intensive outdoor pig farm.



These farms can be smelly and noisy.

Intensive animal production systems cause other **direct** effects on the environment.

Describe these effects.

.....

.....

.....

.....

.....

.....

[3]

17 The photograph shows part of a limestone quarry.



Quarrying can result in a loss of habitats.

State and explain **two** other ways in which quarrying could change local biodiversity.

.....

.....

.....

..... [2]

18 The photograph shows part of a commercial coniferous forestry plantation.



This is a managed monoculture.

Explain how this affects the **soil** environment.

.....

.....

.....

..... [2]

**END OF QUESTION PAPER**

**15**  
**BLANK PAGE**

**PLEASE DO NOT WRITE ON THIS PAGE**

**PLEASE DO NOT WRITE ON THIS PAGE**



**Copyright Information**

OCR is committed to seeking permission to reproduce all third-party content that it uses in its assessment materials. OCR has attempted to identify and contact all copyright holders whose work is used in this paper. To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced in the OCR Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download from our public website ([www.ocr.org.uk](http://www.ocr.org.uk)) after the live examination series.

If OCR has unwittingly failed to correctly acknowledge or clear any third-party content in this assessment material, OCR will be happy to correct its mistake at the earliest possible opportunity.

For queries or further information please contact the Copyright Team, First Floor, 9 Hills Road, Cambridge CB2 1GE.

OCR is part of the Cambridge Assessment Group; Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.