

Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										



General Certificate of Education
Advanced Subsidiary Examination
June 2010

Environmental Studies

ENVS1

Unit 1 The Living Environment

Thursday 20 May 2010 9.00 am to 10.00 am

You will need no other materials.
You may use a calculator.

Time allowed

- 1 hour

Instructions

- Use black ink or black ball-point pen.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 60.
Two of these marks are for the Quality of Written Communication.
- You will be marked on your ability to:
 - use good English
 - organise information clearly
 - use specialist vocabulary where appropriate.
- Question 5 (b) should be answered in continuous prose.
Quality of Written Communication will be assessed in this answer.

For Examiner's Use	
Examiner's Initials	
Question	Mark
1	
2	
3	
4	
5	
6	
TOTAL	

ENVS1



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SA0051/Jun10/ENVS1

ENVS1

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Answer **all** questions in the spaces provided.

1 The table describes some uses of practical techniques.

Complete the table by selecting the appropriate letter from the list below.

- A** Belt transect
- B** Kick sampling
- C** Lincoln Index
- D** Pooter
- E** Quadrat
- F** Diversity Index
- G** Light trap
- H** Biotic Index

Use of technique	Technique
Collection of aquatic invertebrates from a stream	
Recording changes in the species along an environmental gradient	
Quantitative assessment of the number of different species and their relative abundance in an area	
Collection of moths at night	
Estimation of the population size using mark-release-recapture	

(5 marks)

5

Turn over for the next question

Turn over ►



- 2** The table summarises the ecological niches of four monkey species on Bioko, an island off the coast of Africa.

Monkey species	Feeding location	Male mean body mass/kg	Mean size of family group	Altitude range/m
Bioko red-eared monkey	tops of trees	3.6	10	Sea level to 3000
Bioko black colobus	middle of trees	10.2	7	Sea level to 3000
Bioko Preuss's monkey	ground	5.5	8	600 to 3000
Bioko drill	ground	20.0	18	Sea level to 1200

- 2 (a)** Explain what is meant by an ecological niche.

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(2 marks)

- 2 (b) (i)** With reference to the table, suggest why hunting pressure on the Bioko drill is greater than on the other species.

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(2 marks)

- 2 (b) (ii)** Suggest why the Bioko drill and the Bioko Preuss's monkey tend to be found in different parts of the island.

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(2 marks)



- 2 (b) (iii)** Suggest why the Bioko black colobus and the Bioko red-eared monkey may be found in the same parts of the island without directly competing.

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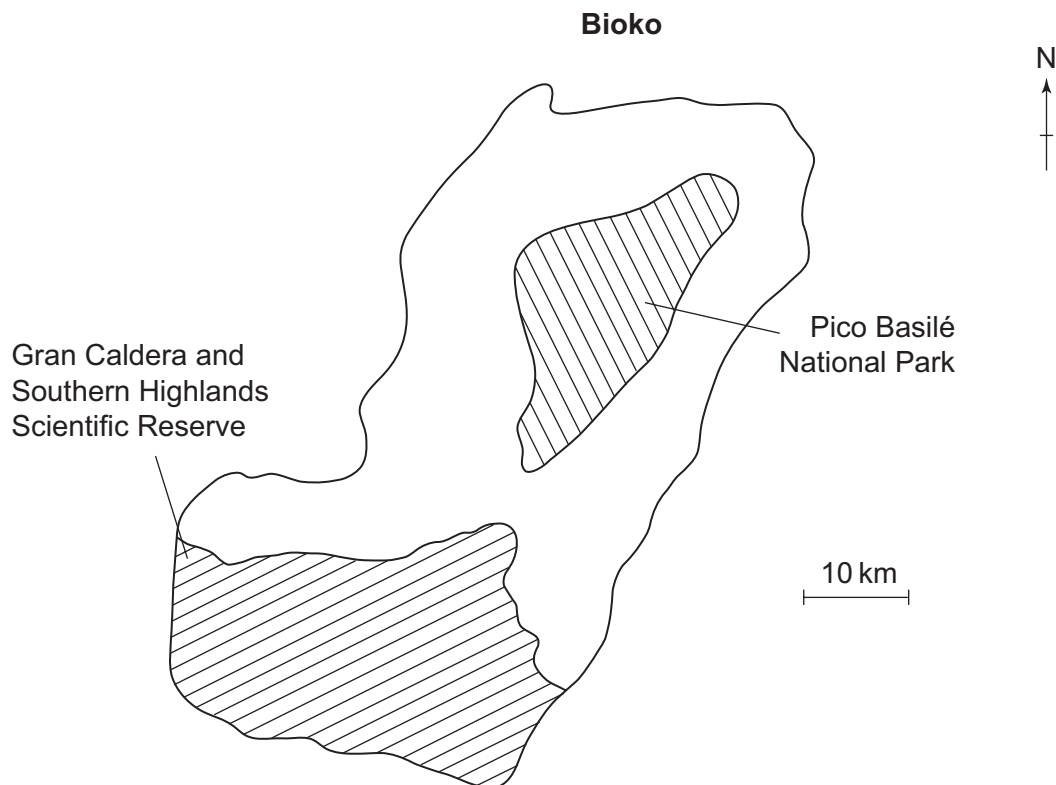
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(2 marks)

- 2 (c)** The map shows the two large protected areas on the island.



Explain why wildlife conservationists have proposed that the two protected areas should be connected by a biological corridor.

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(2 marks)



3 Photosynthetic organisms evolved about 2700 million years ago.

3 (a) The composition of the atmosphere slowly changed as a result of the development of photosynthesis. Two main gases changed in concentration.

Name the gas which:

3 (a) (i) increased in concentration
(1 mark)

3 (a) (ii) decreased in concentration.
(1 mark)

3 (b) Plants contribute to the character of the countryside.

Outline how the Environmental Stewardship Scheme may be used to protect plants to enhance the landscape.

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(5 marks)



3 (c) State **three** purposes of a National Park.

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(3 marks)

10

Turn over for the next question

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- 4 The picture shows the streaked bombardier beetle, *Brachinus sclopeta*, which at one time was thought to be extinct in Britain. Bombardier beetles are remarkable for their ability to shoot a hot and toxic chemical spray at potential predators.



Photograph: © Benoit Martha/Buglife

- 4 (a) This species was rediscovered in a brownfield site in London which was about to be redeveloped for housing.

- 4 (a) (i) Name a procedure which may be carried out to identify and quantify conflicting issues in major developments.

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(1 mark)

- 4 (a) (ii) Suggest **two** reasons, other than their importance in food chains, why bombardier beetles may be conserved.

1

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(2 marks)

- 4 (a) (iii) State an appropriate conservation listing or designation that may be used to protect this species.

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(1 mark)



4 (b) Suggest how Green Belts may be a threat to wildlife-rich urban brownfield sites.

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(2 marks)

4 (c) Successful protection of a site for a species may result in the population reaching the carrying capacity.

4 (c) (i) Define *carrying capacity*.

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(2 marks)

4 (c) (ii) Suggest **two** density-dependent factors that might prevent further population growth.

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(2 marks)

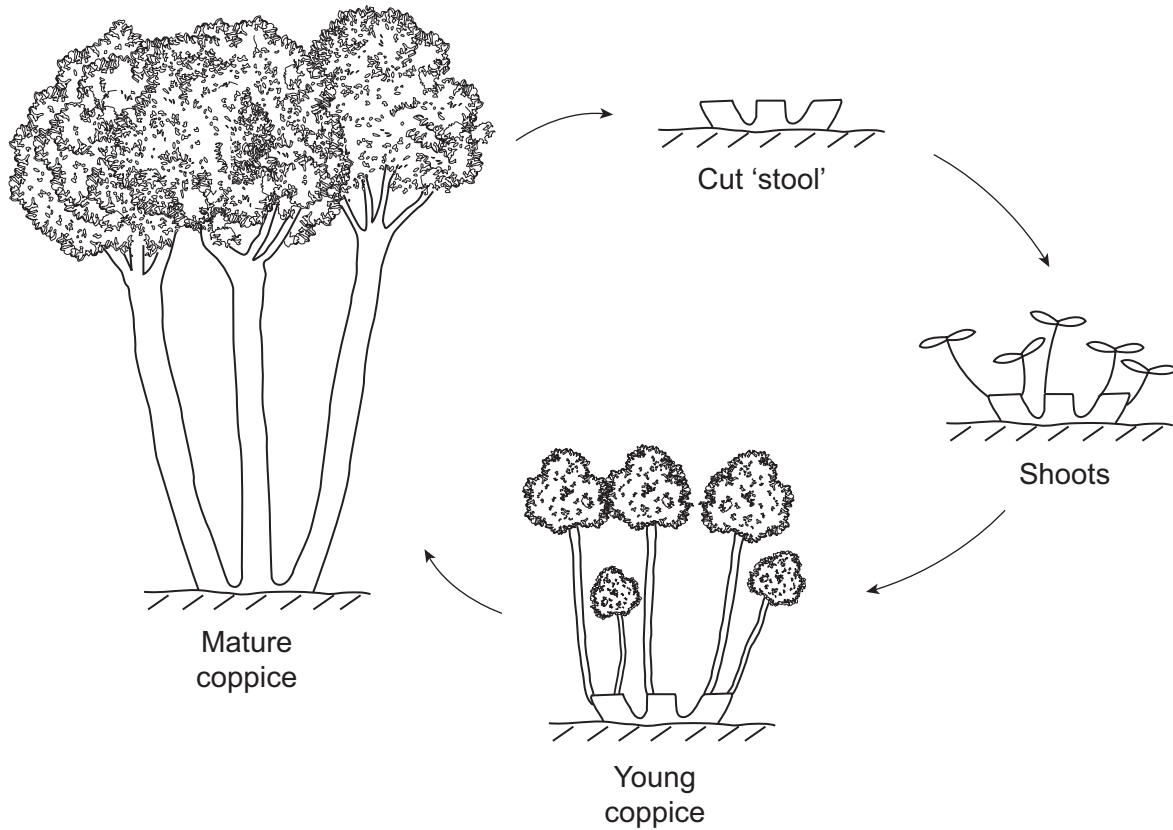
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- 5 The diagram shows a coppicing cycle. Coppicing is a traditional technique which is now used for managing broadleaved woodland in order to increase its value for wildlife.



- 5 (a) Outline how pitfall traps may be used to investigate the species diversity of soil and litter invertebrates in different stages of the coppicing cycle.

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(4 marks)



- 5 (b)** Many traditional management practices such as coppicing are no longer widely used.
Suggest why stopping such practices may result in a loss of species diversity.

Quality of Written Communication will be assessed in this answer.

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(6 marks)

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- 6** The picture shows a coral reef.



Photograph: Chuck Savall 2009, www.coral.org

- 6 (a)** Outline the abiotic factors which are essential for the survival of coral reefs.

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(3 marks)

- 6 (b)** Many types of coral, shellfish, turtles and other organisms associated with coral reefs are protected under CITES.

Explain how CITES helps to protect wildlife.

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(2 marks)



6 (c) (i) Describe **two** ways in which the runoff and sediment from rivers threaten coral reef ecosystems.

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(4 marks)

6 (c) (ii) The table shows data from a survey of 179 people diving on the Great Barrier Reef.

Number of people	% of people	% total damage caused
150	84	0
22	12	29
7	4	71

Using the data and your own knowledge, suggest how the threat of physical damage to coral reefs, by diving, may be reduced.

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(3 marks)

Turn over ►



6 (d) Outline the importance of coral reefs to humans.

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(3 marks)

15

END OF QUESTIONS



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