

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

B493/01

Candidates answer on the Question Paper

OCR Supplied Materials:

None

Other Materials Required:

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

Wednesday 26 May 2010
Morning

Duration: 45 minutes



Candidate Forename		Candidate Surname	
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Centre Number						Candidate Number				
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INSTRUCTIONS TO CANDIDATES

- Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes above.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure that you know what you have to do before starting your answer.
- Answer **all** the questions.
- Do **not** write in the bar codes.
- 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 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 **20** pages. Any blank pages are indicated.

Answer **all** the questions.

1 The photograph shows an earthworm.

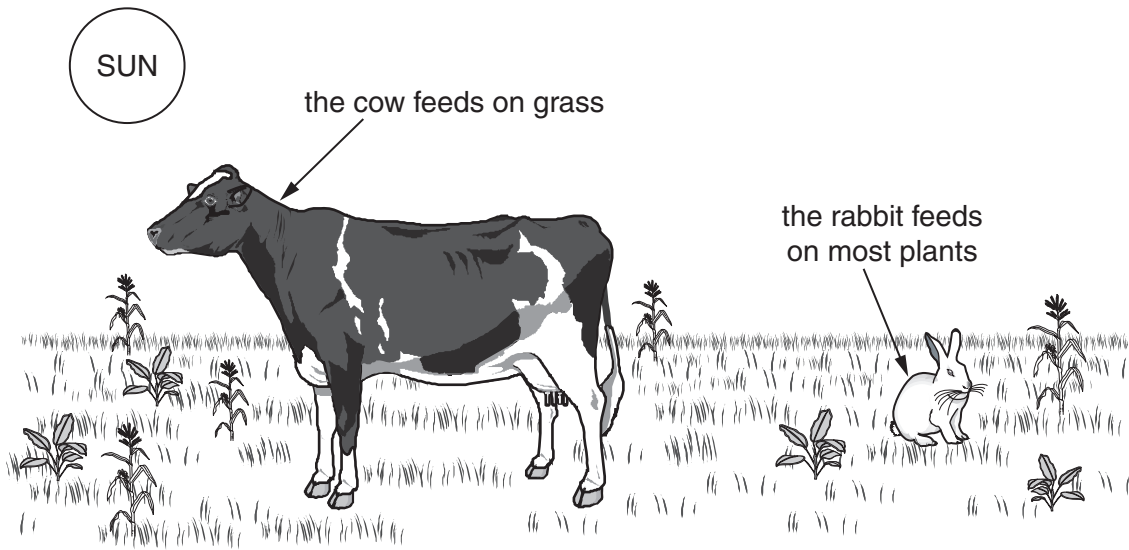


The habitat of an earthworm is:

- A leaves
- B nocturnal
- C soil
- D social

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

2 The diagram shows an ecosystem.



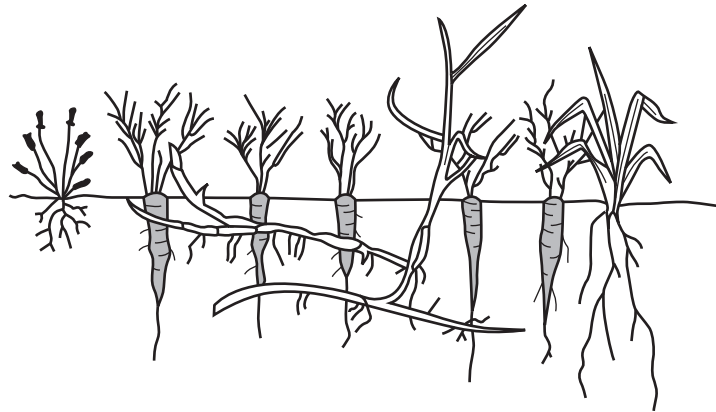
Food chains exist in ecosystems.

Put **P** and an arrow on the diagram to label a producer in a food chain.

Make sure the **P** and the arrow can be clearly seen.

[1]

3 The picture shows carrots growing amongst weeds in a garden plot.



Choose **two** words from the list below to complete the sentence.

- carbon dioxide
- light
- nitrogen gas
- space
- water

The **roots** of the carrots and weeds are competing for and

.....

[2]

4 This question is about doing a pH test on soil.

There are 6 stages to carrying out this test.

4 of the stages are shown in the table below.

stages	order of stages
1	place soil sample to be tested in the test tube
2	add barium sulphate powder
3	
4	add universal (soil) indicator
5	shake and leave
6	

Choose from the list below to complete the table.

add distilled (deionised) water

add lime water

compare with a colour chart

heat the test tube

test with litmus paper

[2]

5 The photograph shows clover.

Clover is a legume that is used in crop rotation.

It is 'ploughed back' into the soil to release nutrients.



Which **main** nutrient is released when clover is 'ploughed back' into the soil?

- A carbonate
- B nitrate
- C phosphate
- D potassium

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

6 Look at these photographs.

burning



ploughing



spraying



dumping plastic

Which farm activity could result in the pollution of **both** the air and nearby streams?

- A burning
- B ploughing
- C spraying
- D dumping plastic

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

7 The photograph shows students setting off to do fieldwork.



A **risk assessment** is always needed before students do any fieldwork in school.

The risk assessment states that:

‘fieldwork should be carried out in groups of two or three pupils’.

Why is this instruction included?

- A pupils can exchange information
- B there is less habitat disturbance
- C there is safety in numbers
- D the work can be done more quickly

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

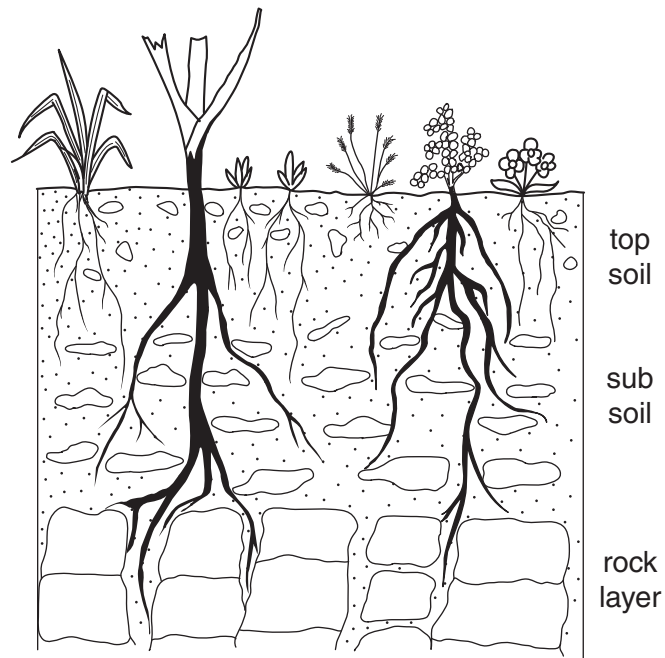
8 Food can be produced from GM (genetically modified) crops.

Why might growing GM crops cause long term harm to the environment?

- A GM pollen might affect air quality.
- B GM crops might destroy hedgerows.
- C GM crops might cause visual pollution.
- D GM crops might breed with wild species.

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

9 The drawing shows a soil profile.



State how plants help break up rock during soil formation.

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

10 The photograph shows a parakeet.

Parakeets

- were brought to England from India
- have escaped from captivity
- are very common in southern England
- live in parks and woods.



Parakeets eat fruit, berries, nuts and seeds.

(a) Explain how their beak is adapted to this diet.

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

(b) Describe **one** other adaptation they have for survival in parks and woods.

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

11 The photograph shows a big tractor and **wide sprayer** in use.



Using a **wide sprayer** provides advantages for the farmer.

- The job is done more quickly, this saves labour costs.
- Less diesel is needed which saves money.

State **one other** advantage for the farmer.

..... [1]

12 The photographs show a commercial glasshouse and a poultry shed.

Both are used for intensive production.



**commercial
glasshouse**



**poultry
house**

State **two** environmental conditions that are controlled in these buildings.

1

2 [2]

13 Hedges need regular management and cutting.

The photographs show two ways of managing hedges.



hedge cut by machine



hedge cut by hand and laid

Countryside Stewardship provides grants to farmers for laying hedges.

Suggest **two** reasons why cutting and laying hedges by hand is encouraged.

- 1
-
- 2
-

[2]

14 The photograph shows a garden slug.



Slugs are a garden pest.

They can be controlled by putting down a poisonous bait.

(a) Suggest an environmental risk of controlling slugs by poisonous bait.

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

(b) Suggest how the gardener can reduce this risk when using poisonous bait.

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

15 The picture shows an advert for 'Slug Gone'.



It is a natural method for the control of slugs and weeds.
Pellets made of wool fibre are put on the ground around plants.
The pellets absorb water and form a 'carpet' layer on the soil surface.
The wool fibres irritate the slug's 'foot' so the slug does not go near the plant.

(a) Explain why 'Slug Gone' can be called 'organic'.

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

(b) Explain how 'Slug Gone' controls weeds around the plant.

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

16 Animals are adapted to the ecosystems in which they live. If their ecosystem changes they do not survive well.

Look at this table.

mammal	population in 2010	percentage decline in UK between 1985 and 2010	main reason for decline	
			habitat loss	competition with similar species
harvest mouse	1.4 million	71	✓	
hazel dormouse	45 000	23	✓	
hedgehog	1.3 million	21	✓	
mountain hare	442 000	13		✓
red squirrel	121 000	64		✓
water vole	875 000	88		✓

Choose from the list below to answer the following questions.

- harvest mouse
- hazel dormouse
- hedgehog
- mountain hare
- red squirrel
- water vole

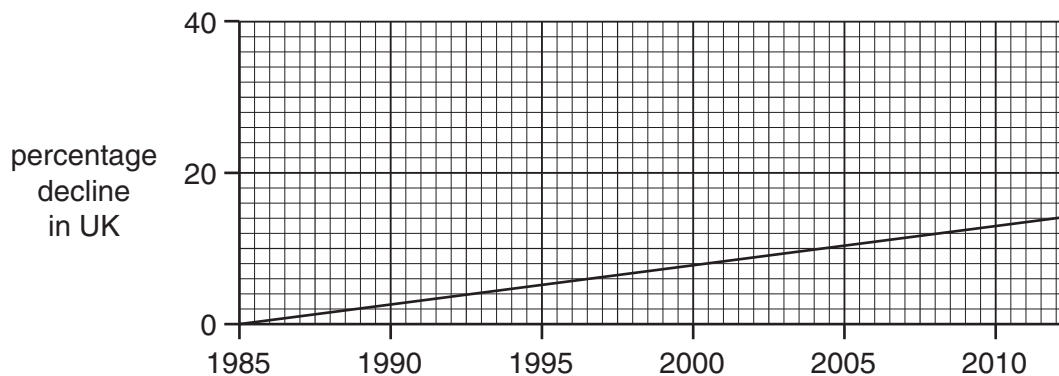
(a) Which is the rarest mammal in 2010?

..... [1]

(b) Which mammal declined most between 1985 and 2010 due to habitat loss?

..... [1]

(c) Which mammal's percentage decline is represented by the graph below?



..... [1]

17 The table lists farms by size and shows the percentage of farms that have hedges.

farm size	percentage of farms having hedges
large	94
medium	95
small	92

It is difficult to make a link between farm size and the percentage of farms that have hedges from this data.

Suggest why.

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

- 18 The Countryside Stewardship Scheme requires that farm hedges are cut **only** from October to March.

The table compares **farm types** and when their **hedges are cut**.

farm type	percentage of hedges cut			
	Jan–March	April–June	July–Sept	Oct–Dec
cereals	37	0	20	43
other crops	39	1	19	41
pigs & poultry	33	3	13	51
dairy	26	0	23	51
sheep	30	1	13	56
mixed	36	0	15	49

Choose from the list below to answer the following questions.

- cereals**
other crops
pigs & poultry
dairy
sheep
mixed

- (a) Which farm type has the highest record of cutting hedges **outside** the required period?

..... [1]

- (b) The Countryside Stewardship Scheme recommends that farm hedges be cut every 2 or 3 years.

The table compares **farm types** and the **frequency of hedge cutting**.

farm type	percentage of hedges cut			
	twice a year	once a year	once every 2 or 3 years	never
cereals	2	26	60	12
other crops	1	26	52	12
pigs & poultry	0	37	46	17
dairy	0	46	44	10
sheep	1	41	35	23
mixed	1	41	47	11

Which **two** farm types have a higher percentage of hedges cut **once a year** than the recommended once every 2 or 3 years?

..... and [1]

19 The diagram shows part of a display from the Science Museum.

Energy

We depend on energy from the world around us.
Energy is stored in fuels such as uranium, coal and oil.
Energy can be taken from tides, flowing water and wind.

The world will soon be facing an energy crisis.

Suggest reasons why.

.....

.....

.....

.....

..... [3]

20 The photograph shows the Great Bustard.



This bird became extinct in England in 1832.
There are 35,000 bustards living elsewhere in the world.
The Royal Society for the Protection of Birds (RSPB) is supporting the introduction of bustards into Wiltshire.

Is this suitable for a conservation body like the RSPB?

Give reasons for your answer.

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

21 The photographs show two ways of cultivating sunflowers.



monoculture cultivation



mixed cultivation

Define 'monoculture' and describe **two** effects it has had on the landscape.

definition

.....

effect 1

.....

effect 2

..... [3]

END OF QUESTION PAPER

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