

<b>Candidate Forename</b>		<b>Candidate Surname</b>	
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<b>Centre Number</b>						<b>Candidate Number</b>				
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**OXFORD CAMBRIDGE AND RSA EXAMINATIONS  
GENERAL CERTIFICATE OF SECONDARY EDUCATION**

**B493/01**

**ENVIRONMENTAL AND  
LAND-BASED SCIENCE**

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

**WEDNESDAY 26 MAY 2010: Morning**

**DURATION: 45 minutes**

**SUITABLE FOR VISUALLY IMPAIRED CANDIDATES**

**Candidates answer on the Question Paper**

**OCR SUPPLIED MATERIALS:**

**None**

**OTHER MATERIALS REQUIRED:**

**Electronic calculator**

**Pencil**

**Ruler (cm/mm)**

**READ INSTRUCTIONS OVERLEAF**

## **INSTRUCTIONS TO CANDIDATES**

- **Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes on the first page.**
- **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.**
- **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).**

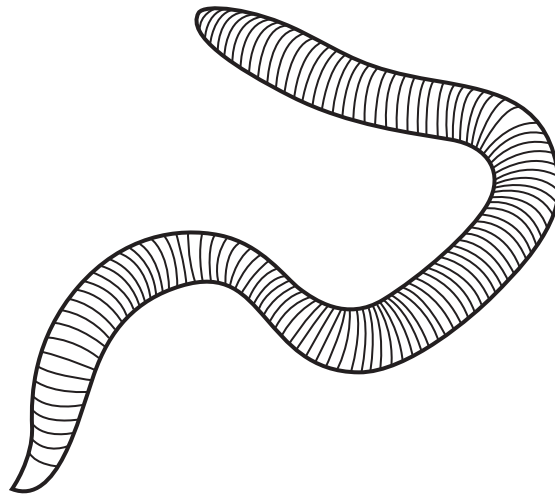
## **INFORMATION FOR CANDIDATES**

- **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.**

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**Answer ALL the questions.**

**1 The diagram shows an earthworm.**



**The habitat of an earthworm is:**

**A leaves**

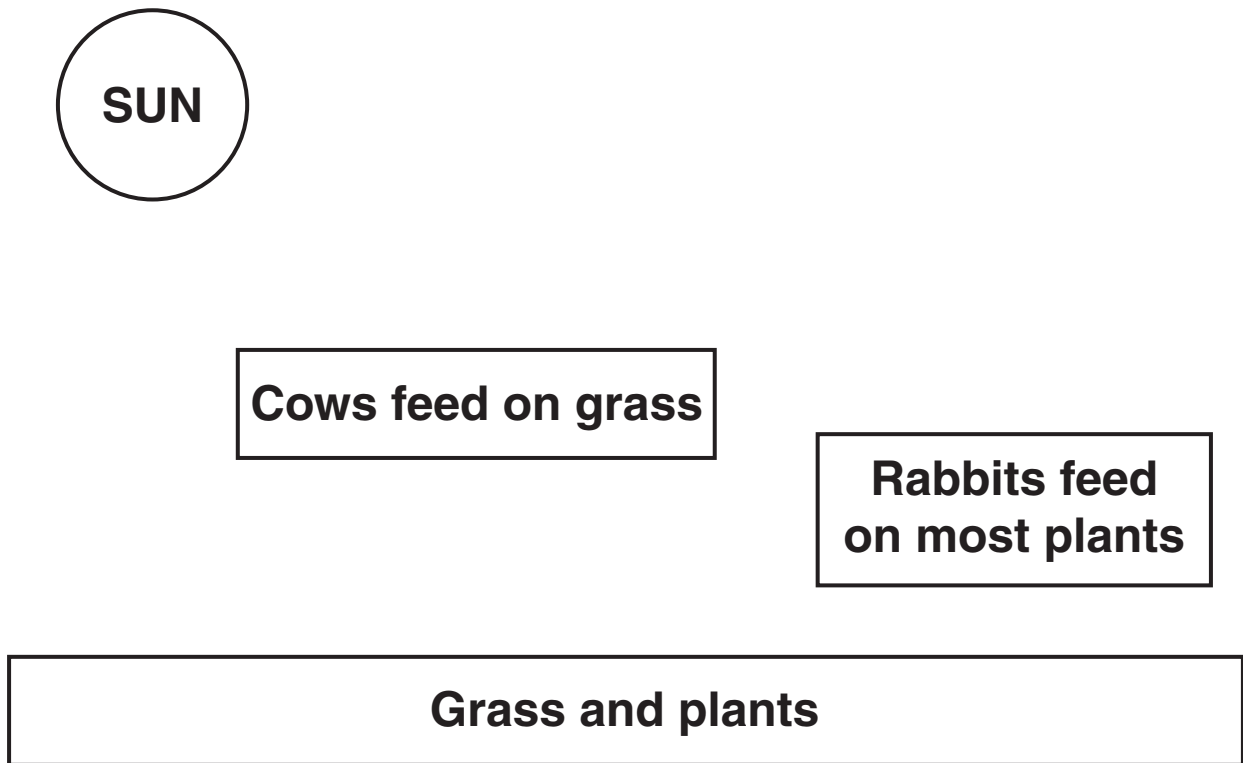
**B nocturnal**

**C soil**

**D social**

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

**2 The diagram shows an ecosystem.**

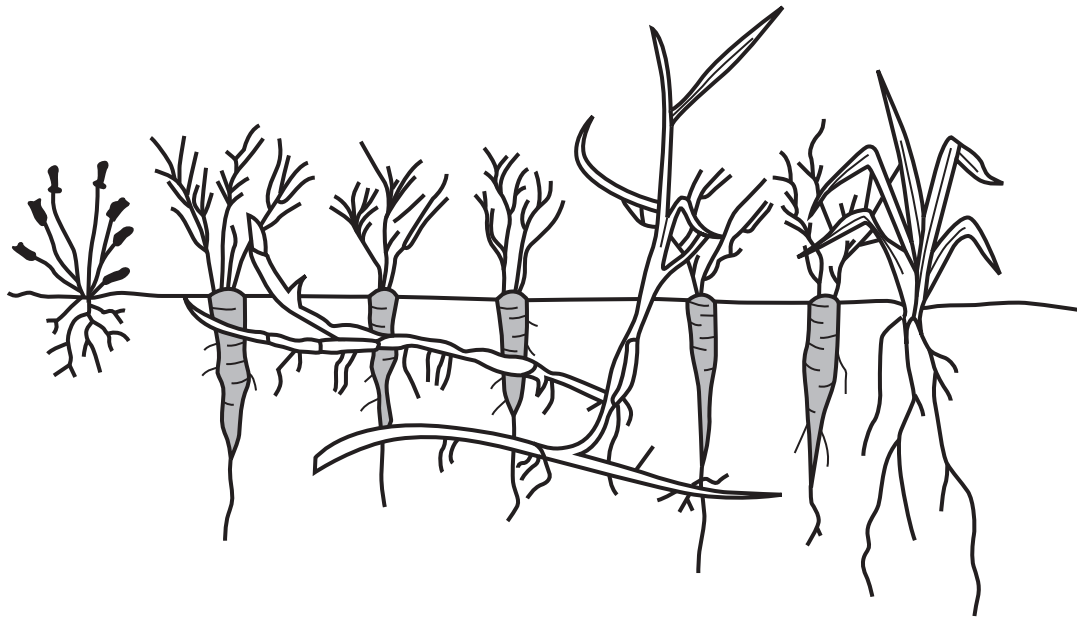


**Food chains exist in ecosystems.**

**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.

<b>STAGES</b>	<b>ORDER OF STAGES</b>
<b>1</b>	<b>place soil sample to be tested in the test tube</b>
<b>2</b>	<b>add barium sulphate powder</b>
<b>3</b>	
<b>4</b>	<b>add universal (soil) indicator</b>
<b>5</b>	<b>shake and leave</b>
<b>6</b>	

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 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 the list of farm activities.

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 A group of students are going to carry out a fieldwork exercise.**

**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]**

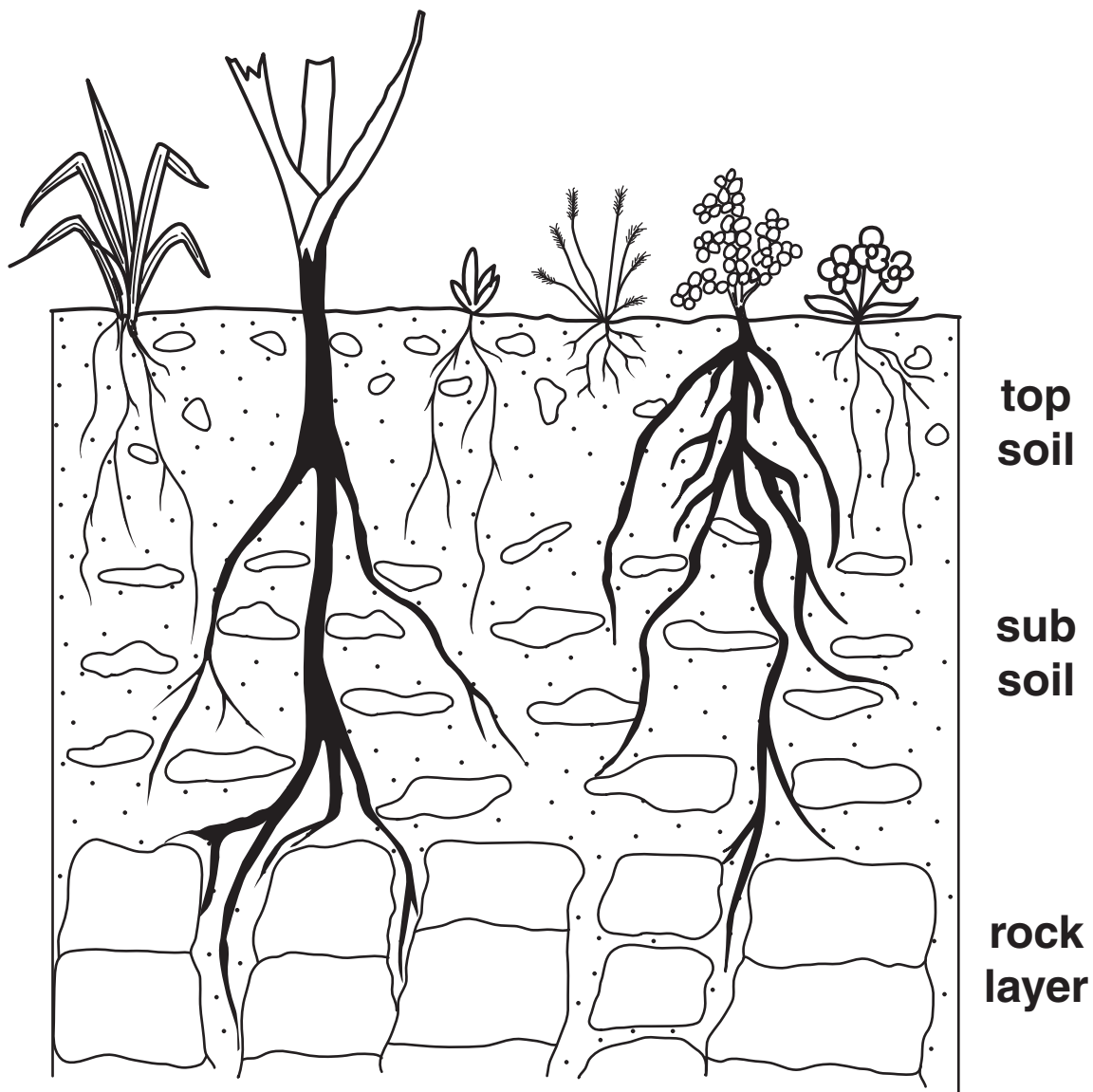
**8 Food can be produced from GM (genetically modified) crops.**

**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.**

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**[1]**

## 10 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.

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[1]

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

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[1]

**11 Some farmers use big tractors and wide sprayers to spray their crops.**

**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 Large commercial greenhouses and large poultry sheds are used for intensive production.**

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

1 \_\_\_\_\_

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

**13 Hedges need regular management and cutting.**

**They can be cut by machine or cut by hand and layered.**

**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 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.**

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[1]

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

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[1]



15 Here is an advert for 'Slug Gone'.

## **Slug Gone**

**ENVIRONMENTALLY FRIENDLY**  
multi purpose **GrowAid** pure wool pellets  
ideal for organic gardening

have the big advantage of ...

- 100% natural goodness
- rich organic source of nitrogen
- soil conditioner
- wool pellet blanket will not blow away
- safe for animals and children

**GrowAid**

**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'.**

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**[1]**

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

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**[1]**

**16 Animals are adapted to the ecosystems in which they live.**

**If their ecosystem changes they do not survive well.**

**Look at the table opposite.**

**Choose from the list below to answer the following questions.**

- HARVEST MOUSE**
- HAZEL DORMOUSE**
- HEDGEHOG**
- MOUNTAIN HARE**
- RED SQUIRREL**
- WATER VOLE**

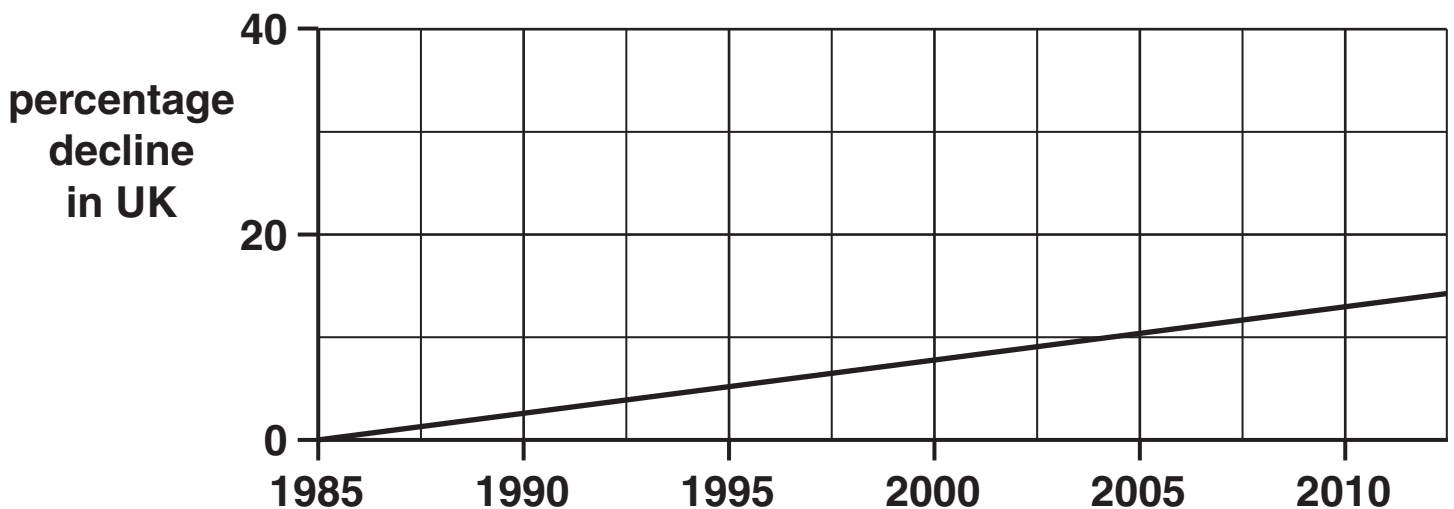
**(a) Which is the rarest mammal in 2010?**

\_\_\_\_\_ [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]

				<b>MAIN REASON FOR DECLINE</b>	
<b>MAMMAL</b>	<b>POPULATION IN 2010</b>	<b>PERCENTAGE DECLINE IN UK BETWEEN 1985 AND 2010</b>	<b>HABITAT LOSS</b>	<b>COMPETITION WITH SIMILAR SPECIES</b>	
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		✓	

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

<b>FARM SIZE</b>	<b>PERCENTAGE OF FARMS HAVING HEDGES</b>
<b>large</b>	<b>94</b>
<b>medium</b>	<b>95</b>
<b>small</b>	<b>92</b>

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

**Suggest why.**

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**[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.**

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**[3]**

**20 The Great Bustard is a bird that 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?**

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**Give reasons for your answer.**

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**[2]**



**21 Sunflowers can be cultivated in two ways, monoculture cultivation or 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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