OXFORD CAMBRIDGE AND RSA EXAMINATIONS

GCSE

B683/02

ENVIRONMENTAL AND LAND-BASED SCIENCE

Commercial Horticulture, Agriculture and Livestock Husbandry (Higher Tier)

WEDNESDAY 21 JUNE 2017: Morning

DURATION: 1 hour

plus your additional time allowance

MODIFIED ENLARGED 24pt

Candidate forename		Candidate surname	

Centre number					Candidate number				

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 first 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.

Answer ALL the questions.

1   The photographs show three types of lawnmower.

A	B	C

(a) (i) Which of the mowers is most suitable for cutting fine grass such as a bowling green?

_____ [1]

(ii) Suggest TWO reasons why this mower is most suitable for a bowling green.

1 _____

_____

2 _____

_____

[2]

(b) Suggest ONE advantage and ONE disadvantage of a petrol lawnmower over an electric lawnmower.

Advantage

_____

_____

Disadvantage

_____

_____

[2]

(c) Match the lawn types below to the grass mixture in the table.

BOWLING GREEN/FINE LAWN   FAMILY LAWN

FOOTBALL PITCH

Write your answers in the table. [2]

Grass mixture	Lawn type
45% - Dwarf Rye Grass 45% - Creeping Fescue 5% - Bent	
90% - Dwarf Fescue 10% - Bent	
70% - Perennial Rye Grass 30% - Creeping Fescue	

(d) To grow a fine lawn from seed grass, seed is applied at a rate of 70 g per m^2.

Grass seed is sold by the kg and costs £8.90 per kg.

Calculate the cost of sowing a lawn that is 16 m × 14 m.

Show your working.

cost of lawn = £ _____ [2]

(e) The graph shows the growth rate of grass over a typical year.

growth
rate

J   F   M   A   M   J   J   A   S   O   N   D

growing month
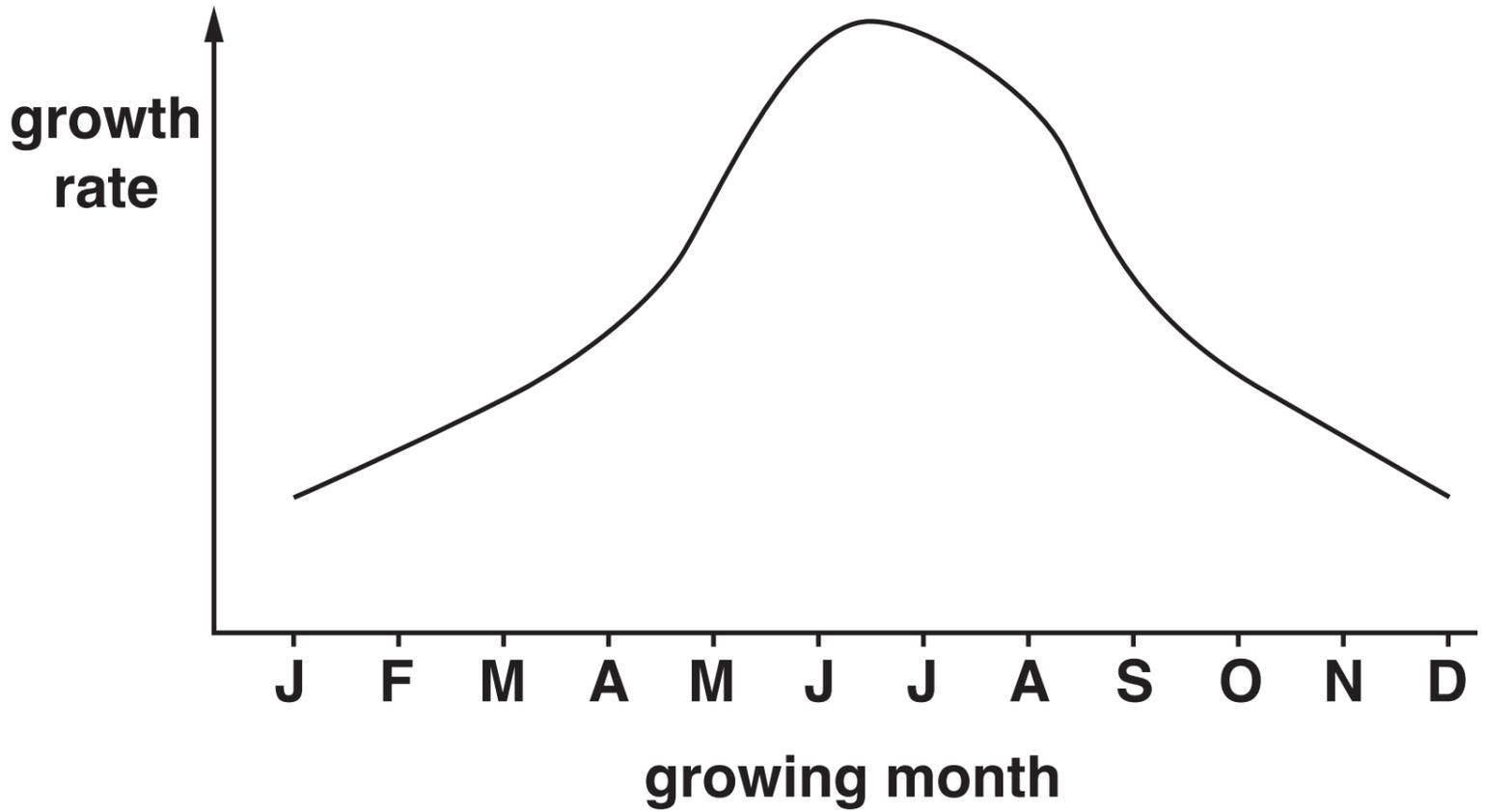
Suggest reasons for the pattern of growth rate as shown.

_____

_____

_____

_____ [2]

[TOTAL: 11]

2 **The diagrams show trees used in parks, gardens and street planting.**
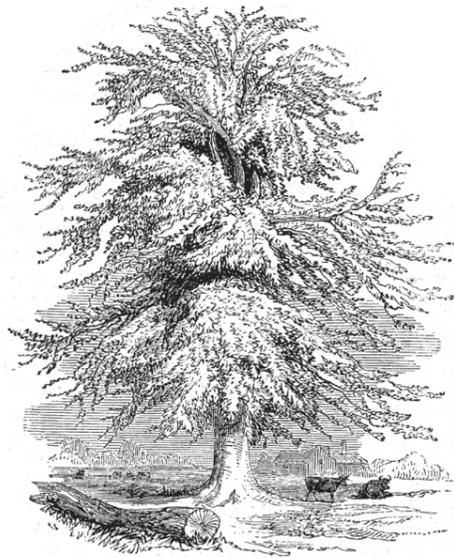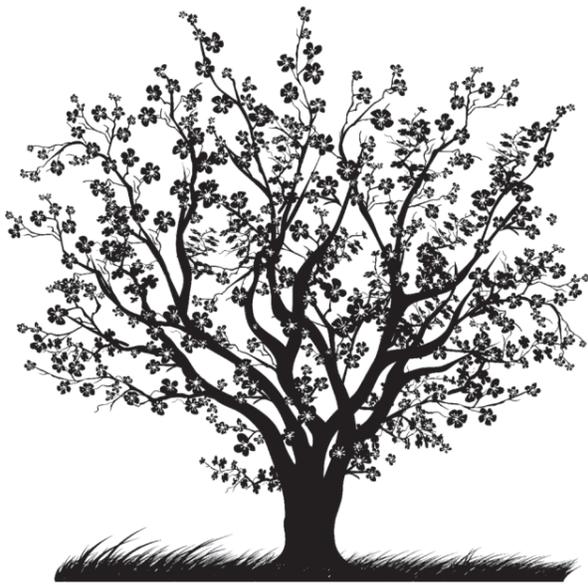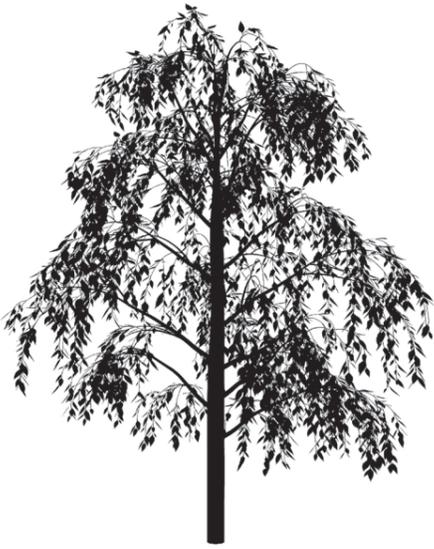
(a) State TWO tasks that might be needed to keep these trees healthy for many years.

1 _____

2 _____

[2]

(b) Describe how these and other trees you have studied can be used to provide interest at different times of the year.

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

_____

_____

_____

_____

_____

_____

_____

_____

_____ **[6]**

[TOTAL: 8]

3 Most tomatoes grown in the UK are produced in glasshouses.

Growing tomatoes in glasshouses is more expensive than growing outside.

(a) Explain why growers use a glasshouse although it is more expensive than growing outside.

_____

_____

_____

_____ **[2]**

(b) Suggest how automation in the greenhouse can be used to reduce labour costs.

_____

_____

_____

_____ **[2]**

[TOTAL: 4]

4 The Rare Breeds Survival Trust is a charity which helps protect rare breeds of farm animal.

(a) Explain why certain breeds of livestock are in danger of extinction and why it is considered important to preserve these rare breeds.

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

_____

_____

_____

_____

_____

_____

_____

_____

_____ **[6]**

(b) Embryo transplants can be used to increase the numbers of rare breeds.

Describe the stages in this embryo transplant process.

_____

_____

_____

_____ **[2]**

[TOTAL: 8]

5 (a) Explain why the diet of a pregnant animal is different from that of a non-pregnant animal of the same age.

_____

_____

_____

_____

_____

_____

_____ **[3]**

(b) Suggest why many farmers use artificial insemination (AI) rather than keeping a male animal for breeding.

_____

_____ **[1]**

(c) (i) What is meant by the term cloning?

_____

_____ [1]

(ii) Why are some people concerned about the use of cloning in animal breeding?

_____

_____

_____

_____ [1]

[TOTAL: 6]

6 The graph shows the sale of antibiotics for use on turkeys between 2002 and 2015.

The graph also shows the percentage of turkeys sampled which were found to have antibiotic resistant bacteria between 2002 and 2015.

Key
—————— number of turkeys with antibiotic resistance
—————— number of antibiotics sold

antibiotics sold millions of pounds (£)

percentage of turkeys sampled with antibiotic resistant bacteria (%)

year
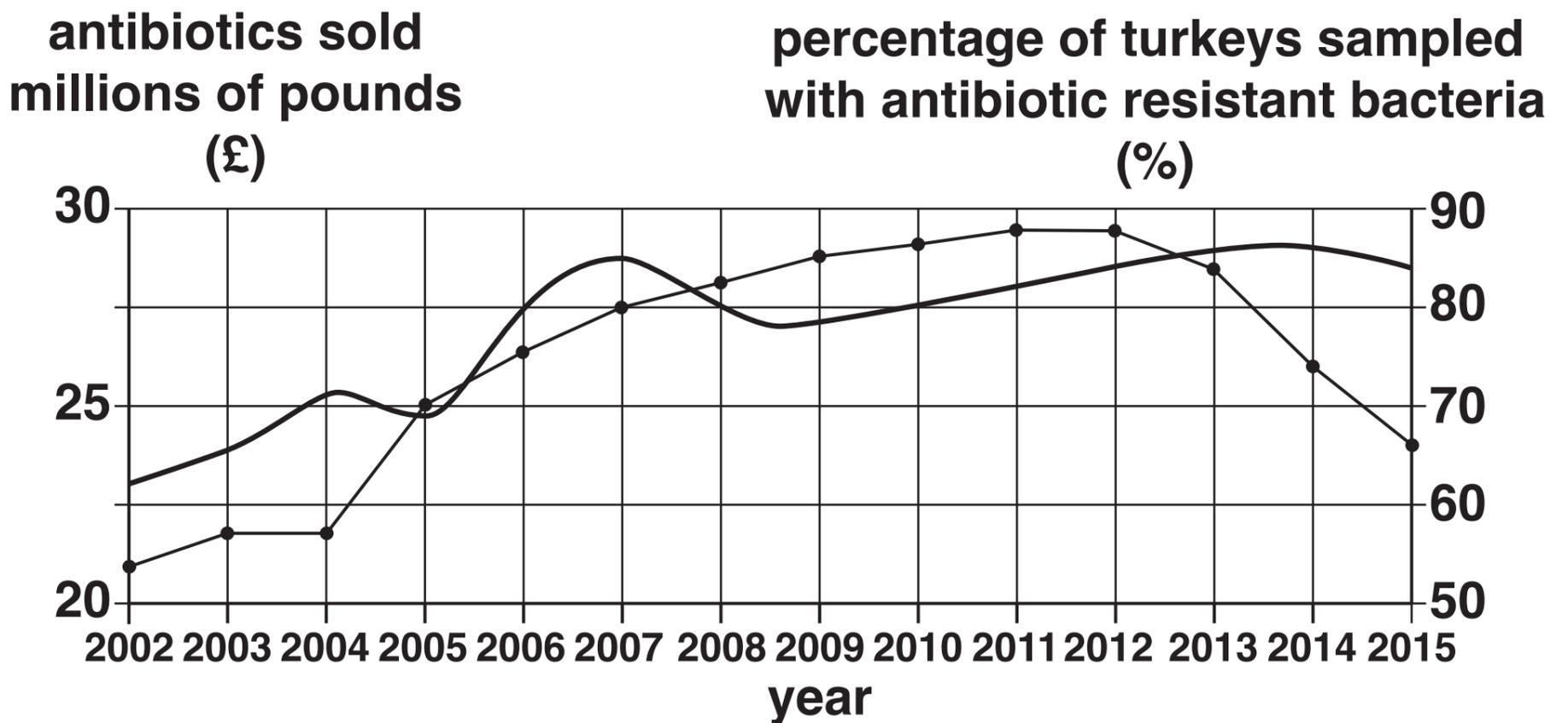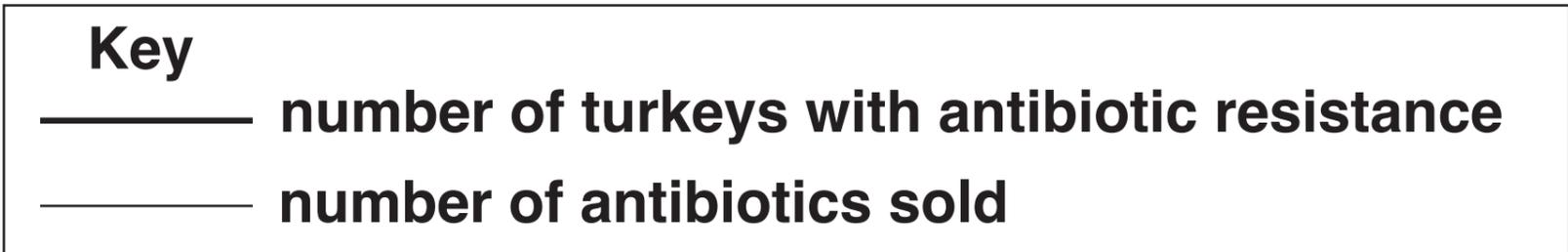
(a) What does the graph suggest about the relationship between antibiotic use and the occurrence of antibiotic resistant bacteria in turkeys?

_____

_____

_____

_____ [2]

(b) Explain how the over use of antibiotics can influence antibiotic resistance.

_____

_____

_____

_____ **[2]**

(c) By what percentage does the number of turkeys with antibiotic resistant bacteria increase between 2002 and 2015?

_____ **% [1]**

(d) Suggest how the evidence in the graph might influence the use of antibiotics on turkeys in the future.

_____

_____

_____

_____ **[2]**

[TOTAL: 7]

7   **Hormones play an important role in all aspects of reproduction in mammals.**

   Using examples from livestock you have studied, explain the different roles hormones play in the stages of reproduction from oestrus (coming into heat) to lactation (producing milk for the baby).

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

   _____

   _____

   _____

   _____

   _____

   _____

   _____

   _____

   _____

   _____ **[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).

18

19