Surname

Other Names

Candidate Signature

AQA

General Certificate of Secondary Education
Higher Tier
June 2012

Science B
Unit Biology B1

BLY1H

H

Biology
Unit Biology B1

Written Paper

Tuesday 12 June 2012   9.00 am to 9.45 am

For this paper you must have:
● a ruler.
You may use a calculator.

Time allowed
● 45 minutes

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 45.
● You are expected to use a calculator where appropriate.
● You are reminded of the need for good English and clear presentation in your answers.

Advice
● In all calculations, show clearly how you work out your answer.

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

1 (a) **List A** gives the names of three stages in trialling a new drug.

List B gives information about the three stages.

Draw a line from each stage in **List A** to the correct information in **List B**.

List A
Stage

List B
Information

Used to find if the drug is toxic

Tests on humans including a placebo

The first stage in the clinical trials of the drug

Tests on humans using very small quantities of the drug

Used to find the optimum dose of the drug

Tests on animals

Used to prove that the drug is effective on humans

(3 marks)

1 (b)   Read the passage.

Daily coffee dose delays development of Alzheimer's in humans.

Alzheimer's is a brain disease that causes memory loss in elderly people. Scientists studied 56 mice that had been genetically engineered to develop Alzheimer's.

Before treatment all the mice did badly in memory tests.

Half the mice were given a daily dose of caffeine in their drinking water. The dose was equivalent to the amount of caffeine in six cups of coffee for a human.

The other mice were given ordinary water.

After two months, the caffeine-drinking mice did better in memory tests than the mice drinking ordinary water.

The headline for the passage is not justified.

Explain why as fully as possible.

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(3 marks)

6

Turn over for the next question

2 The diagram shows an evolutionary tree for humans.
The diagram is based on a study of fossils.
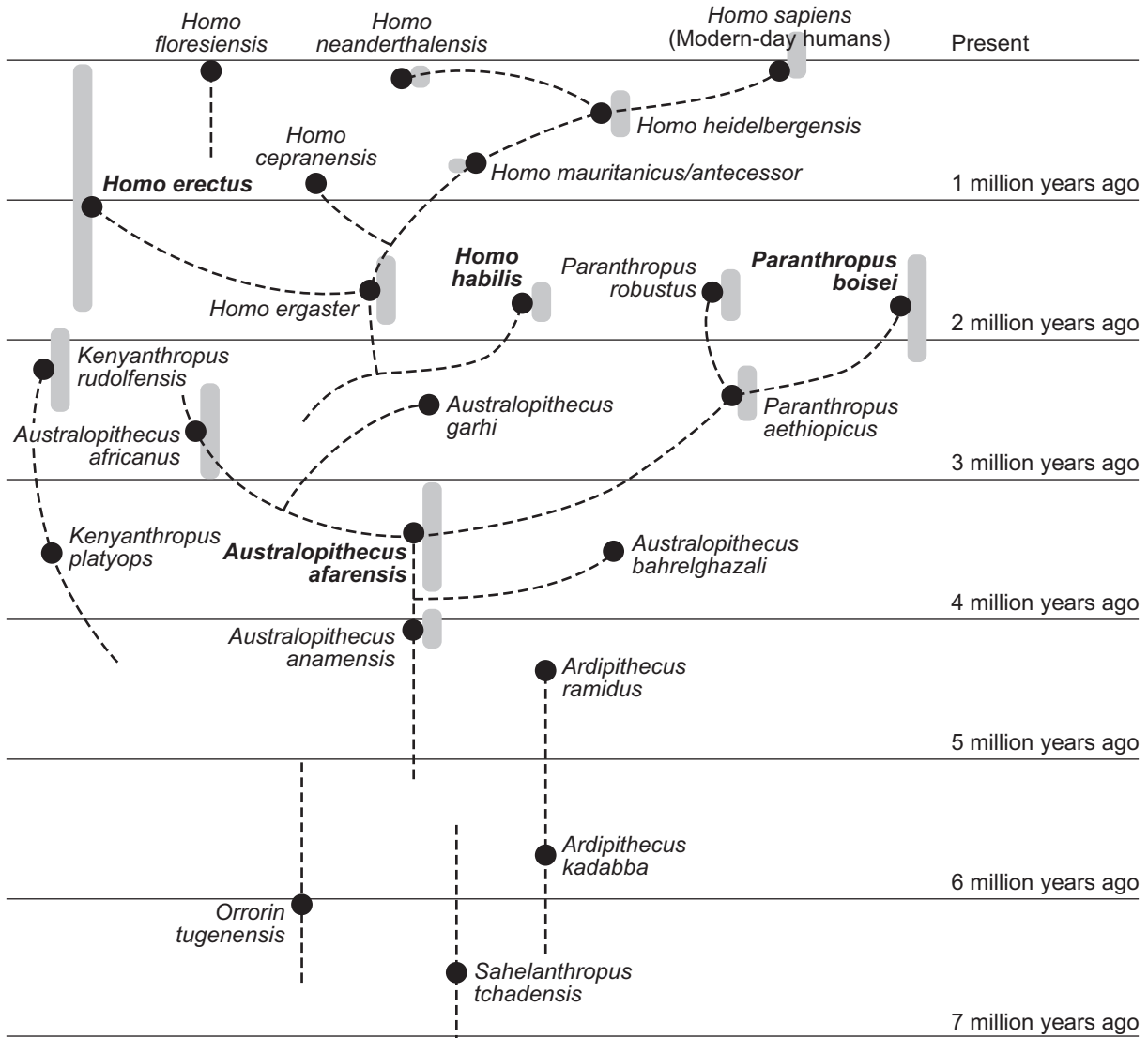
Key: When each species lived ┊ Relationships between species

2 (a) When did *Australopithecus afarensis* first appear?

.... million years ago.
(1 mark)

2 (b) Which species was the direct ancestor of *Paranthropus boisei*?

....
(1 mark)

2 (c) Which species is most closely related to *Homo habilis*?

....

(1 mark)

2 (d) About 250 fossils of *Homo erectus* have been found. About 50 of these fossils have been found in China.

A Chinese scientist has suggested the hypothesis that Chinese people evolved from *Homo erectus*.

Most scientists do **not** agree with this hypothesis.

Use the information above and information from the diagram to suggest **two** reasons why.

1 ....

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2 ....

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(2 marks)

2 (e) Darwin suggested the theory of natural selection. It was a long time before this theory was accepted by most scientists.

Give **two** reasons why it took a long time.

1 ....

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2 ....

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(2 marks)

7

Turn over for the next question

Turn over ▶

3 (a)   Many people in developed countries are *malnourished*.

3 (a) (i)   What does *malnourished* mean?

.... G/J78993/Jun12/

....
(1 mark)

3 (a) (ii)   Give **two different** effects on the body of being malnourished.

1 ....

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2 ....

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(2 marks)

3 (b)   Many people in developing countries do **not** get enough food.

The bar chart shows the number of people **not** getting enough food in five African countries. The chart also shows the population of each of the countries.
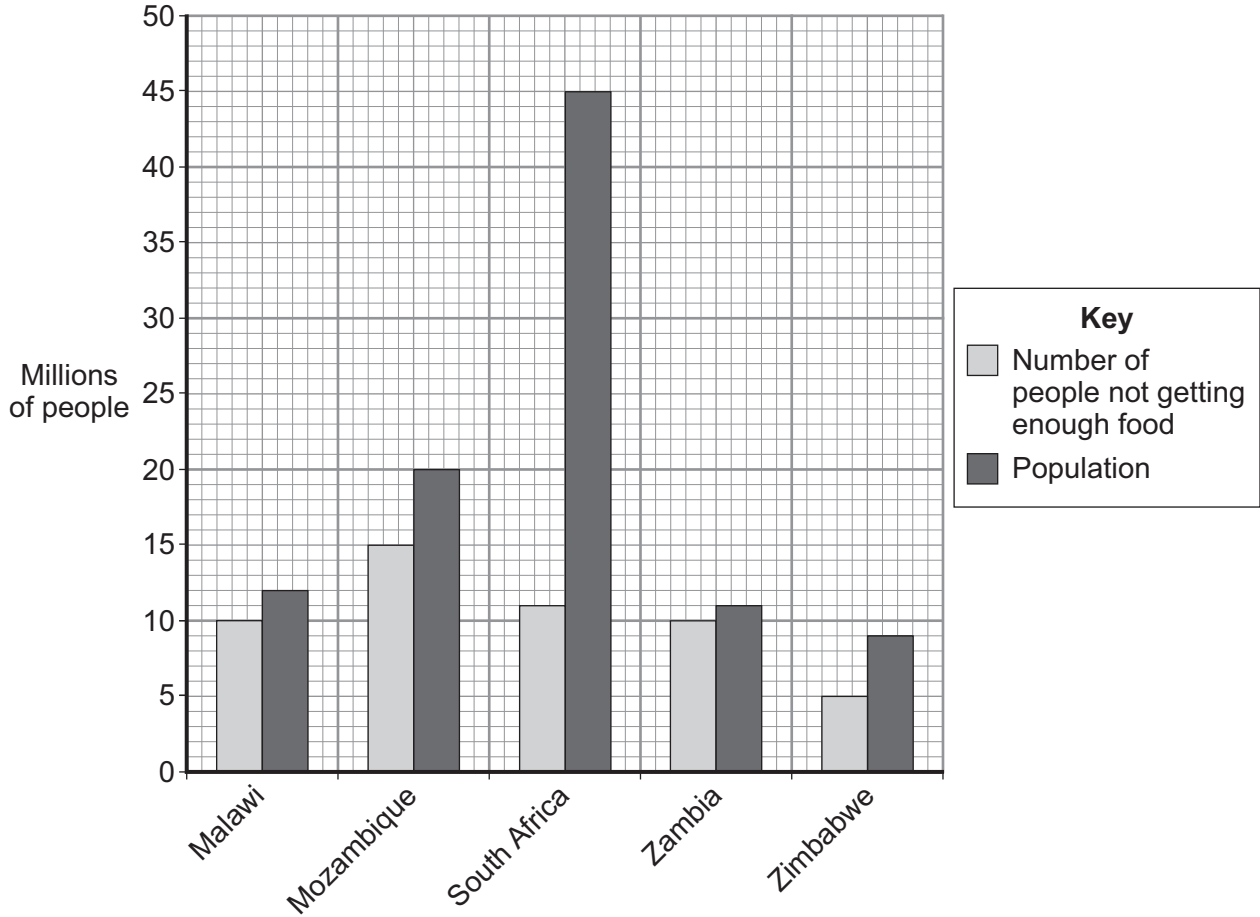
3 (b) (i)   Which country has the greatest proportion of people **not** getting enough food?

....

(1 mark)

3 (b) (ii)   Give **two** health problems that are linked to **not** getting enough food.

1 ....

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2 ....

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(2 marks)

6

Turn over ▶

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**DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED**

08

4 The photograph shows a lionfish. Lionfish are normally found in the Pacific Ocean.
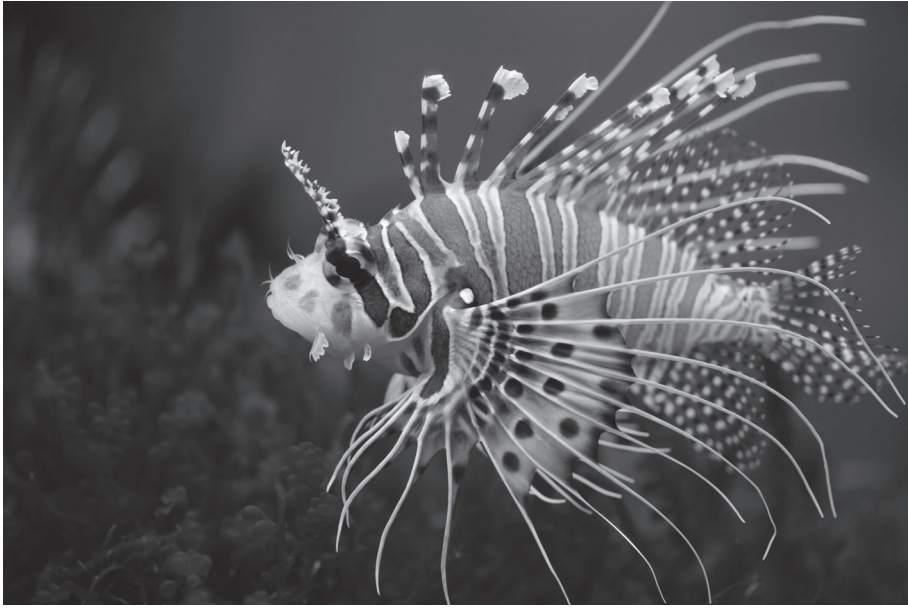
In 1992 six lionfish escaped from an aquarium into the Atlantic Ocean.

Now there are thousands of lionfish in the Atlantic Ocean. Numbers of the native Atlantic fish have gone down because the lionfish have eaten many native Atlantic fish.

Suggest explanations for the large increase in the number of lionfish in the Atlantic Ocean.

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(3 marks)

3

Turn over ▶

5 The graph shows how the likelihood of getting pregnant and the likelihood of infertility change with a woman's age.

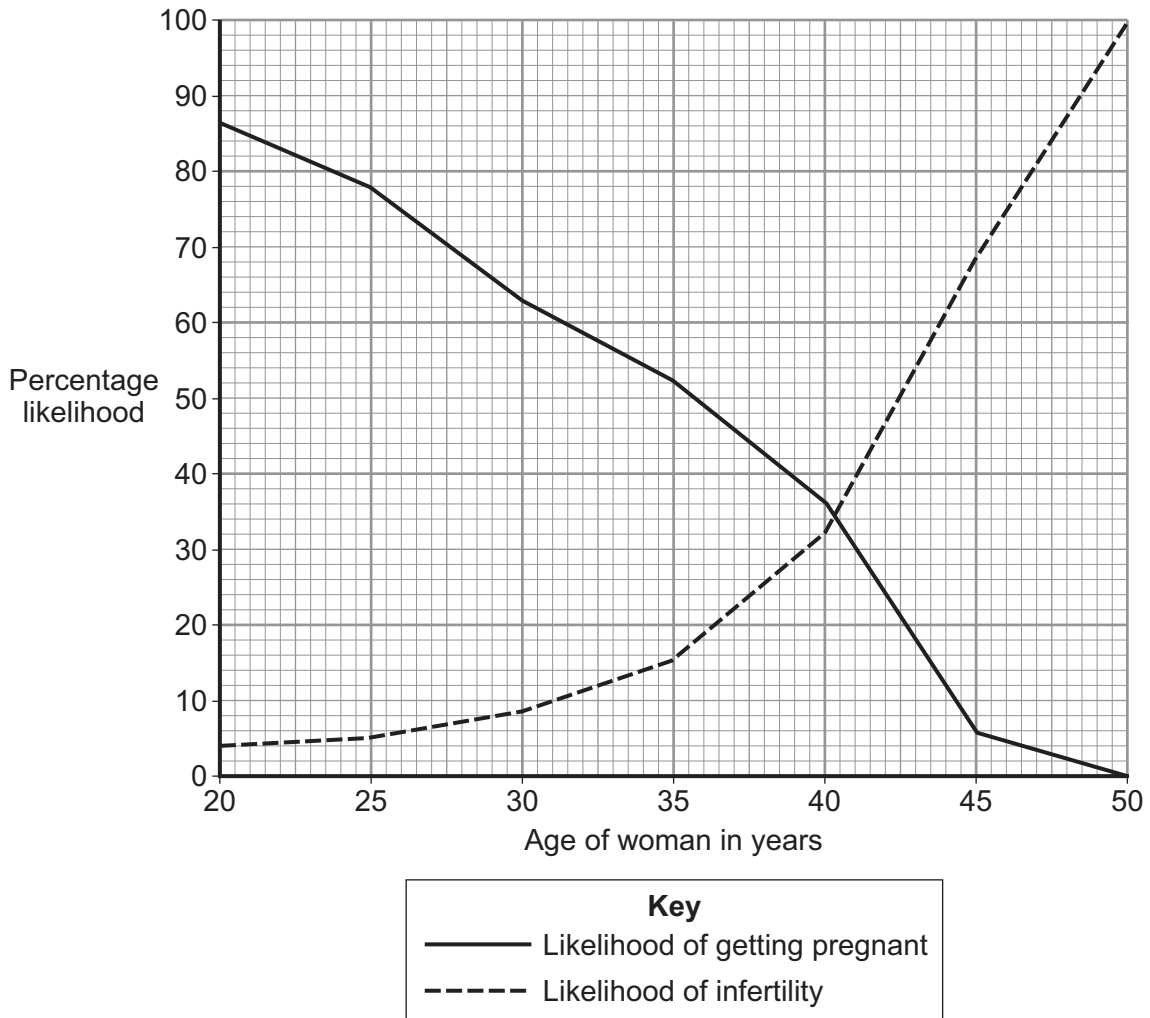The data is for healthy women who have unprotected sexual intercourse during one year.

Key
——— Likelihood of getting pregnant
‑ ‑ ‑ ‑ Likelihood of infertility

5 (a) Use information from the graph to answer this question.

A woman in her mid-twenties is thinking about waiting until her late-thirties before she has children.
A doctor advises the woman not to wait.

Explain why the doctor gives this advice.

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(2 marks)

5 (b) The hormones FSH and LH are used in fertility treatment.

Give the function in fertility treatment of:

5 (b) (i) FSH

....

....

(1 mark)

5 (b) (ii) LH.

....

....

(1 mark)

5 (c) In the first stage of in-vitro fertilisation (IVF), eggs from the mother are fertilised with sperm from the father.

Describe the next stages of IVF.

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(2 marks)

6

Turn over ▶

6 A child saved apple seeds from an apple she ate. She planted the seeds in the garden. A few years later the apple trees she had grown produced apples.

6 (a) The apples from the new trees did **not** taste like the original apple.

Explain why.

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(2 marks)

6 (b) (i) Apple trees can be reproduced so that the apples from the new trees will taste the same as the apples from the parent trees.

Give **one** method used to reproduce apple trees in this way.

....

....

(1 mark)

6 (b) (ii) Explain why the method you have suggested in part **(b)(i)** will produce apples that taste the same as the apples from the parent trees.

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....

(2 marks)

5

7 Many strains of bacteria have developed resistance to antibiotics.

The table shows the number of people infected with a resistant strain of one species of bacterium in the UK.

Year	2004	2005	2006	2007	2008
Number of people infected with the resistant strain	3499	3553	3767	3809	4131

7 (a) Calculate the percentage increase in the number of people infected with the resistant strain between 2004 and 2008.

Show clearly how you work out your answer.

....

....

Percentage increase = ...
(2 marks)

7 (b) Explain, in terms of natural selection, why the number of people infected with the resistant strain of the bacterium is increasing.

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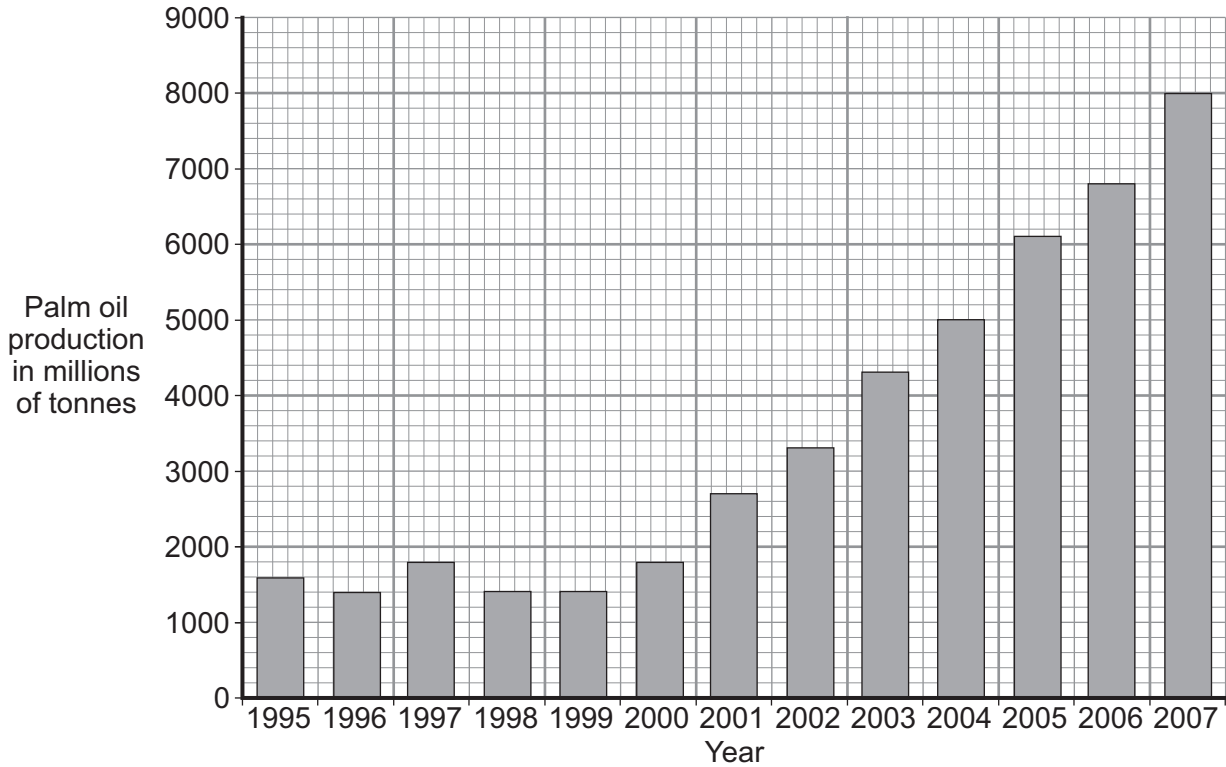
(3 marks)

5

Turn over for the next question

Turn over ▶

8 In South Asia, forests are being cleared to grow palm oil trees. The palm oil is mainly used to produce fuel for motor vehicles.

The graph shows the production of palm oil in one South Asian country.

Palm oil production in millions of tonnes

8 (a) Calculate the mean increase in palm oil production per year for the five year period 2000 to 2005.

Show clearly how you work out your answer.

....

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Mean increase = ... millions of tonnes per year

(2 marks)

8 (b) Clearing forests and replacing the forests with palm oil trees to produce fuel for motor vehicles will affect the composition of the atmosphere.

Explain how.

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(5 marks)

7

END OF QUESTIONS

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