AQA GCSE Biology | 8461

SPECIFICATION POINT 4.6.3.6

Extinction

Past-paper questions

Tier	**Higher**
Question groups	**26**
Available paper years	**2007–2025**

Using this booklet

1. Answer the questions in order and show your working.
2. Original question numbers and marks are retained.
3. Print at actual size (100%) for measuring questions.
4. Use the companion answer booklet to check your work.

Name: _____ **Date:** _____

Whole questions are retained for context, so some parts assess other specification points. Current and legacy sources are labelled. Continue on extra paper if needed.

4.6.3.6 Extinction

Question 01

January 2007 | BLY1H | Original Q2 | Legacy

2 Deforestation affects the environment in many ways.

(a) Deforestation increases the amount of carbon dioxide in the atmosphere.

Give **two** reasons why.

1 .....

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2 .....

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(2 marks)

(b) Deforestation also results in a loss of *biodiversity*.

(i) What is meant by *biodiversity*?

.....

.....

(1 mark)

(ii) Give **one** reason why it is important to prevent organisms from becoming extinct.

.....

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(1 mark)

4

4.6.3.6 Extinction

Question 02

June 2007 | BLY1B | Original Q3 | Legacy

QUESTION THREE

One theory of evolution states that all different species of living organisms alive today have evolved from much simpler life forms. These simpler life forms first appeared more than three billion years ago.

The remains of extinct animals and plants may form fossils that can be found in rocks.

Fossils are studied to find out how present-day species have changed from earlier species.

3A The presence of fossils supports the theory of evolution because . . .

1 fossil organisms are found in different layers of rocks.

2 fossil organisms have features in common with present-day organisms.

3 present-day organisms have evolved from fossil organisms.

4 adaptation to the environment by fossil organisms caused the development of new species.

3B Which of the following is **not** a cause of extinction?

1 changes in the environment

2 mutation

3 new diseases

4 new predators

4.6.3.6 Extinction

3C Darwin's theory of evolution via natural selection was only gradually accepted because . . .

1 books were expensive.

2 Darwin was not a scientist.

3 Lamark had a better theory.

4 the causes of variation were not known at that time.

3D Scientists are uncertain about the origin of life on Earth because . . .

1 fossils last for only a few million years.

2 humans evolved later than most other organisms.

3 new competitors caused the extinction of the earliest organisms.

4 the earliest organisms had soft bodies.

Turn over for the next question

4.6.3.6 Extinction

Question 03

November 2007 | BLY1B | Original Q1 | Legacy

QUESTION ONE

The drawing shows a museum specimen of an ivory-billed woodpecker which is now thought to be extinct.

Some birdwatchers claim to have heard its distinct call.

Other birdwatchers have heard knocking on the trunk of a tree.

Some people on websites claim to have seen it but nobody has a photograph.



Match statements, **A**, **B**, **C** and **D**, with the numbers **1–4** in the sentences.

A a recent photograph of an ivory-billed woodpecker

B people claiming to have seen the ivory-billed woodpecker

C the distinct bird calls

D the knocking on the trunk of a tree

Question 03 · continued

November 2007 | BLY1B | Original Q1 | Legacy

The most reliable evidence, **so far**, that the ivory-billed woodpecker is **not** extinct is . . . **1** . . . .

After that, the next most reliable evidence would be . . . **2** . . . .

The most valid evidence that the ivory-billed woodpecker is **not** extinct would be . . . **3** . . . .

The evidence that must be considered carefully for any bias must be . . . **4** . . . .

4.6.3.6 Extinction

Question 04

November 2007 | BLY1B | Original Q3 | Legacy

QUESTION THREE

Rabbits and hares are closely related species.

They are thought to have descended from a common ancestor that is now extinct.

3A Extinction may be caused by . . .

1 an increase in variation.

2 a lack of new competitors.

3 fossilisation.

4 changes in the environment.

3B The evidence that rabbits and hares have evolved from a common ancestor would be shown by . . .

1 comparing modern rabbits and hares with other related species.

2 studying the fossil record of rabbits and hares.

3 studying the fossils of predators of rabbits and hares.

4 comparing the behaviour of rabbits and hares.

3C Rabbits and hares both feed on plants and have teeth adapted for this.

Which one of the following is **not** a possible factor for the development of the specialised teeth of rabbits and hares?

1 adaptation to the environment

2 changes in the environment

3 evolution of predators

4 natural selection

4.6.3.6 Extinction

3D What is a mutation?

1 a change in the physical appearance of an organism

2 a change in a gene

3 a form of natural selection

4 a change in the environment

Turn over for the next question

4.6.3.6 Extinction

Question 05

November 2007 | BLY1B | Original Q8 | Legacy

QUESTION EIGHT

This question is about evolution.

8A Darwin suggested the theory of evolution by natural selection.

Darwin's theory states that . . .

1 living organisms respond quickly to changes in the environment.

2 all living organisms are related to each other.

3 organisms mutate if environmental conditions change.

4 organisms with successful adaptations are more likely to survive.

8B Darwin suggested that humans and apes have a common ancestor.

This suggestion was most strongly opposed at the time by . . .

1 the general public.

2 teachers.

3 religious leaders.

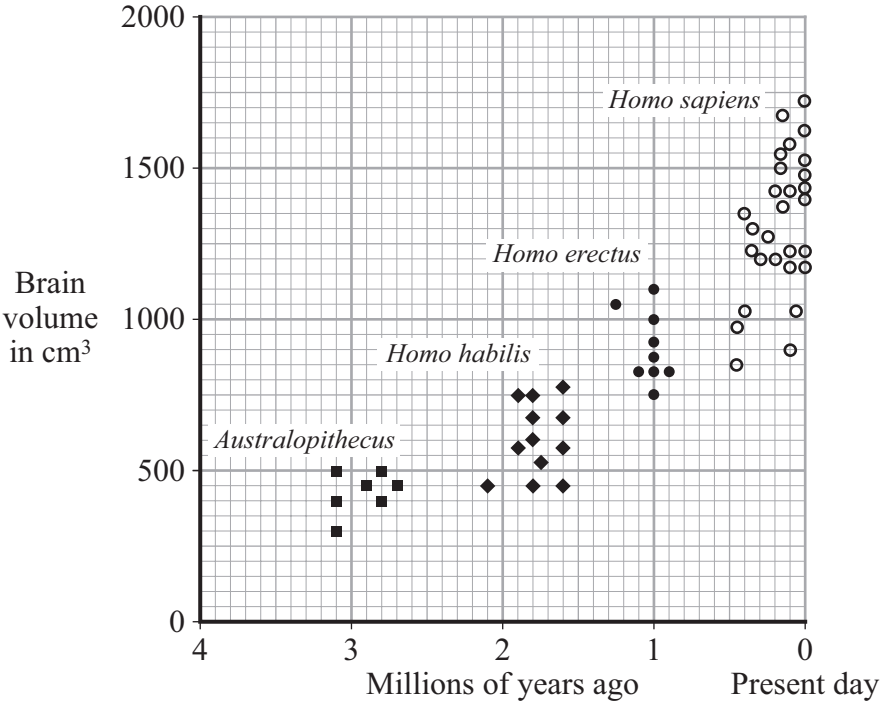
4 members of parliament.

4.6.3.6 Extinction

Question 05 · continued

Modern humans belong to the species *Homo sapiens*. Most scientists think that *Homo sapiens* is related to more primitive species. Three of these primitive species were *Australopithecus*, *Homo habilis* and *Homo erectus*. These three species are now extinct.

The graph shows the volume of the brain of several specimens from each of the species.



8C Which method of measuring the volume of the brain of the extinct species would give the most accurate results?

1 weighing the fossil skulls on an electronic balance

2 measuring the radius of the fossil skulls, then using this to calculate the volume

3 filling the fossil skulls with sand, then pouring the sand into a measuring cylinder

4 measuring the volume of water displaced by fossil skulls

8D The data suggests that . . .

1 *Australopithecus* had a mean brain volume of 500 cm^3.

2 all modern humans have bigger brains than their fossil ancestors.

3 *Homo sapiens* is more intelligent than *Homo habilis*.

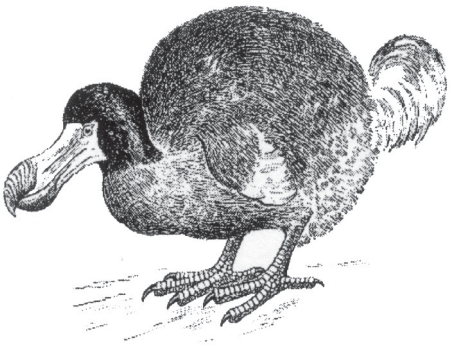
4 mean brain volume has increased during the evolution of humans.

4.6.3.6 Extinction

Question 06

January 2008 | BLY1H | Original Q7 | Legacy

7 The dodo is an extinct bird. The drawing shows an artist's impression of the bird.



Dodo – a flightless bird

The dodo lived on a small island in the middle of the Indian Ocean. Its ancestors were pigeon-like birds which flew to the island millions of years ago. There were no predators on the island. There was a lot of fruit on the ground. This fruit became the main diet of the birds. Gradually, the birds became much heavier, lost their ability to fly and evolved into the dodo.

(a) Suggest an explanation for the evolution of the pigeon-like ancestor into the flightless dodo.

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(4 marks)

4.6.3.6 Extinction

Question 06 · continued

BLANK

(b) The dodo became extinct about 80 years after Dutch sailors first discovered the island in the eighteenth century.

Scientists are uncertain about the reasons for the dodo's extinction.

Suggest an explanation for this uncertainty.

.....

.....

(1 mark)

5

Turn over for the next question

4.6.3.6 Extinction

Question 07

March 2008 | BLY1BP | Original Q2 | Legacy

QUESTION TWO

Read the passage:

> Mount Rainier in America is home to some very rare plants. Many of them grow there even though the weather is so cold that trees cannot grow. As global warming continues, the mountain will become warmer. For every one degree Celsius rise in temperature, the trees can grow 75 metres higher up the mountain.

Match words, **A**, **B**, **C** and **D**, with the numbers **1–4** in the table.

A competition

B environmental change

C survival

D extinction

1	allows trees to grow higher up the mountain
2	a possible consequence of global warming for the rare plants
3	a possible consequence of global warming for both the trees and the rare plants
4	a possible consequence of protecting the rare plants

4.6.3.6 Extinction

Question 08

June 2008 | BLY1BP | Original Q2 | Legacy

QUESTION TWO

This question is about evolution.

Match words, **A**, **B**, **C** and **D**, with the numbers **1–4** in the sentences.

A mutation

B natural selection

C extinction

D variation

Evolution occurs by . . . **1** . . . .

It is a very slow process.

Individual organisms of a particular species have differences in their genes, so may show a wide . . . **2** . . . .

These organisms breed and pass on their genes to the next generation, so passing on their useful characteristics.

More rapid change in a species may result from . . . **3** . . . .

A new disease might cause . . . **4** . . . of the species.

4.6.3.6 Extinction

Question 09

November 2008 | BLY1BP | Original Q5 | Legacy

QUESTION FIVE

The table gives information about the number of species of organisms in the world today.

	Total number of known species
plants	400 000
animals	1 400 000
species which live in tropical rainforests	720 000

5A The rate of extinction of species in tropical rainforests is currently 0.5% per year. This rate is predicted to increase to 5% per year.

How many species will become extinct next year if the predicted rate takes place?

1 3600

2 20 000

3 36 000

4 70 000

5B What is the main cause of the extinction of rainforest species?

1 pollution

2 loss of habitat

3 overcrowding

4 increase in sustainable development

5C Deforestation also damages the environment because . . .

1 less oxygen is released into the atmosphere.

2 less carbon dioxide is released into the atmosphere.

3 less carbon is 'locked-up' in timber.

4 more methane is released into the atmosphere.

4.6.3.6 Extinction

5D One reason often given for clearing forests is that it provides an income for the local population.

Which of the following is **not** an economic reason for deforestation?

1 The forest could be developed for tourism.

2 Some plants in the forest may be sources of useful drugs.

3 The local people can conserve the forest for future generations.

4 Some trees in the forest may be valuable.

Turn over for the next question

4.6.3.6 Extinction

Question 10

November 2008 | BLY1BP | Original Q9 | Legacy

QUESTION NINE

Diagram 1 shows a snake with a poisonous bite.
Diagram 2 shows a snake with a non-poisonous bite.
The two snakes live in the same area.

Diagram 1



Diagram 2



9A Changes in the body patterns of snakes are caused by . . .

1 changes to their habitat.

2 changes to their genes.

3 changes to their predators.

4 changes to their characteristics.

9B The most likely explanation for the similarity in appearance of the non-poisonous snakes to the poisonous snakes is that . . .

1 the poisonous snakes breed with the non-poisonous snakes.

2 the non-poisonous snakes copy the poisonous snakes.

3 the non-poisonous snakes, similar to poisonous ones, are more likely to survive.

4 the poisonous snakes have evolved a defence against predators.

9C Extinction of both poisonous and non-poisonous snakes could be caused by . . .

1 a new predator evolving.

2 the non-poisonous snakes becoming different in appearance from the poisonous ones.

3 competition between predators of the non-poisonous snakes.

4 a scarcity of food in their habitat.

4.6.3.6 Extinction

Question 10 · continued

9D Some species of snake reproduce by parthenogenesis, which is the development of unfertilised eggs into adults.

In parthenogenesis . . .

1 no gametes are produced.

2 there is no mixing of genetic information.

3 there is great genetic variation between the offspring.

4 there are no chromosomes involved.

END OF TEST

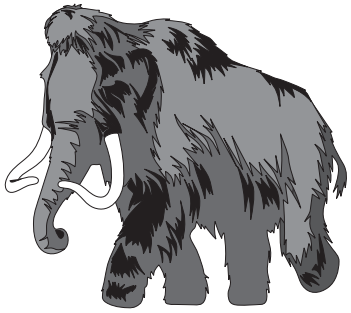
4.6.3.6 Extinction

Question 11

November 2009 | BLY1BP | Original Q3 | Legacy

QUESTION THREE

Woolly mammoths are extinct mammals that are related to modern elephants.



3A There are several possible reasons for the extinction of the woolly mammoth.

Which one of these was the most likely cause of their extinction?

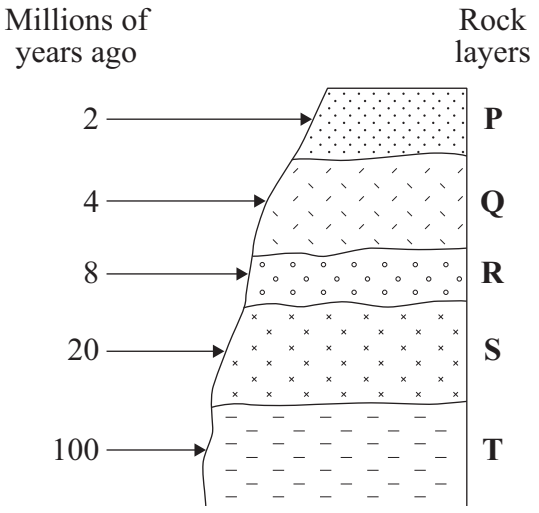
1 continents moving apart

2 an increase in the number of plant species

3 formation of new mountain ranges

4 an increase in the temperature of the Earth

The diagram shows the rocks in a cliff, which were exposed when other rocks wore away.
The times when these rocks were formed are shown.



4.6.3.6 Extinction

Question 11 · continued

3B Woolly mammoths lived on Earth between 4.8 million years ago and 4 thousand years ago.

In which layers of rock could woolly mammoth fossils be found?

1 **T** and **S** only

2 **Q** only

3 **R**, **S** and **T** only

4 **P** and **Q** only

3C Living things are thought to have developed over 3 billion years ago. We cannot be sure what these living things looked like.

This is because . . .

1 no rocks were being formed 3 billion years ago, so there are no fossils.

2 geological activity has destroyed many of the fossils.

3 there are no records because humans had not evolved then.

4 scientists are unable to agree on their appearance.

3D Recently, a pregnant female woolly mammoth was discovered preserved in ice. The cells of this mammoth are still in good condition. Scientists plan to transfer the nucleus from a mammoth skin cell into an elephant egg cell from which the nucleus has been removed. After the cell is given an electric shock, it will be transferred to the womb of a female elephant.

What term is used to describe this process?

1 tissue culture

2 sexual reproduction

3 adult cell cloning

4 taking cuttings

4.6.3.6 Extinction

Question 12

March 2010 | BLY1BP | Original Q1 | Legacy

QUESTION ONE

Tasmanian tigers are similar to Tasmanian devils. Tasmanian tigers became extinct in the 20th century.

The picture shows a Tasmanian tiger.



Scientists are trying to create living Tasmanian tigers. They are using cells from the well-preserved remains of a pregnant Tasmanian tiger. They are trying several methods.

4.6.3.6 Extinction

Question 12 · continued

Match methods, **A**, **B**, **C** and **D**, with the descriptions **1–4** in the table.

A sexual reproduction

B tissue culture

C embryo transplants

D adult cell cloning

	Description
1	Splitting cells from the Tasmanian tiger embryo and transplanting them into the womb of a Tasmanian devil.
2	Joining female gametes from the Tasmanian tiger with male sperm cells from a Tasmanian devil.
3	Growing small groups of cells in a special nutrient solution.
4	Transferring the nucleus from a Tasmanian tiger skin cell into a Tasmanian devil egg cell. After the cell is given an electric shock, it is transferred to the womb of a female Tasmanian devil.

4.6.3.6 Extinction

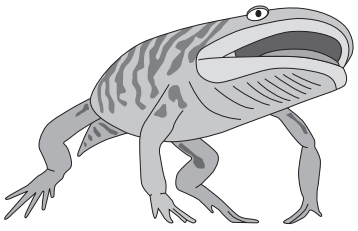
Question 13

March 2010 | BLY1BP | Original Q5 | Legacy

QUESTION FIVE

A new fossil find may be an evolutionary missing link in the amphibian family tree.

The drawing shows an artist's impression of a frogamander.



The 290 million year old fossil, nicknamed 'frogamander', was first collected in Texas by a scientist in the mid-1990s. It was rediscovered in a museum in 2004.

'It had a look of both frogs and salamanders', said the scientist who led a new study of the fossil. 'But I also recognised some primitive features, and I thought that this would be a critical piece of evidence in trying to work out the origins of modern amphibians.'

5A The frogamander needed pools of fresh water in order to breed. It is now extinct.

Which is the most likely cause of its extinction?

1 It was a small animal.

2 It could not run very fast.

3 It fed on small insects.

4 The climate became warmer.

5B Frogs and salamanders are different types of living amphibians.

The different characteristics of frogs and salamanders are directly due to . . .

1 new competitors.

2 changes to the diseases that affect them.

3 changes in their genes.

4 new predators.

4.6.3.6 Extinction

Question 13 · continued March 2010 | BLY1BP | Original Q5 | Legacy

5C Evolution is brought about by natural selection.

Natural selection always involves the survival of the . . .

1 oldest individuals.

2 most intelligent individuals.

3 individuals most suited to the environment.

4 individuals who can eat the widest range of food.

5D Scientists have not completed the evolutionary tree for amphibians yet because . . .

1 frogamanders have primitive features.

2 no-one has ever seen a frogamander.

3 there is not enough fossil evidence.

4 scientists do not know the mechanism of inheritance in amphibians.

4.6.3.6 Extinction

Question 14

March 2010 | BLY1BP | Original Q9 | Legacy

QUESTION NINE

Read the passage about the introduction of invasive species.

Birds are important members of forest communities.

Guam, a Pacific island, lost most of its native birds after a predator, the brown tree snake, was introduced by accident. The snake population density is now quite high – estimated at more than 4000 per square kilometre.

Before the introduction of the brown tree snake, Guam had 12 species of native forest birds. Today, 10 of those are extinct on Guam, and the other two species each have fewer than 200 individuals.

9A The main reason for the rapid increase in the population of brown snakes on Guam was probably that . . .

1 the climate on Guam suited them.

2 there was an abundant supply of tree seeds for food for the snakes.

3 the bird population on Guam had decreased rapidly.

4 there were no predators of brown snakes on Guam.

9B The bird populations on Guam fell rapidly after the introduction of the brown snake.

One possible reason for this was that . . .

1 the number of trees on Guam declined rapidly.

2 the birds on Guam did not recognise the brown snake as a predator.

3 there was competition between the snake and the birds for food.

4 the number of insects on Guam declined rapidly.

Question 14 · continued

A scientist investigated seed dispersal in forests on Pacific islands. She set seed traps beneath and near trees on Guam and on the nearby island of Saipan. Saipan does not have brown tree snakes.

On Saipan, the scientist found seeds in nearly every trap at each location. But on Guam, the seeds appeared only in traps directly under the trees.

Use all the information in this question to answer the following two questions.

9C The scientist's results suggest that . . .

1 seeds on Guam are mainly dispersed by birds.

2 seeds on Guam are mainly dispersed by wind.

3 the distance that seeds on Guam are dispersed depends mainly on their mass.

4 fewer seeds are produced by the trees on Guam than on Saipan.

9D Overall, the most serious long-term effect of the introduction of brown snakes into Guam is likely to be . . .

1 a reduction in the number of birds.

2 a reduction in the number of trees.

3 a reduction in biodiversity.

4 a reduction in sustainable development.

END OF TEST

4.6.3.6 Extinction

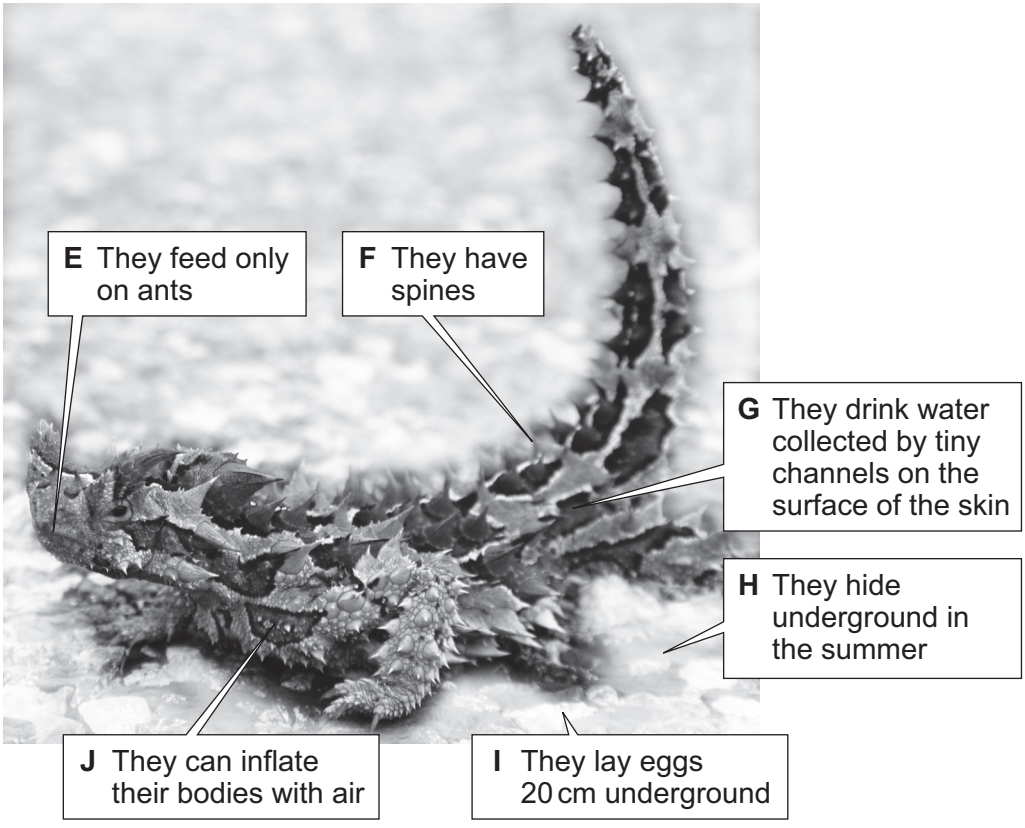
Question 15

June 2010 | BLY1BP | Original Q5 | Legacy

QUESTION FIVE

The photograph shows an animal that lives only in the Australian desert. It is called a moloch.

Some of its features are labelled **E–J**.



5A Which of the features are adaptations to survival in a dry environment?

1 **G**, **H** and **I**

2 **E**, **F** and **J**

3 **F**, **G** and **H**

4 **E**, **G** and **I**

5B Which of the features are adaptations to protect the moloch from being eaten?

1 **E**, **F** and **H**

2 **F**, **H** and **J**

3 **G**, **H** and **I**

4 **E**, **F** and **G**

4.6.3.6 Extinction

Question 15 · continued

5C Which feature might lead to the moloch becoming extinct if there was a change in the environment?

1 **E**

2 **F**

3 **H**

4 **I**

5D Local people say that the moloch lays its eggs on the cooler side of small hills.

How might scientists test this hearsay?

1 keep equal numbers of molochs captive on each side of a hill

2 watch where females spend most of their time

3 survey each side of hills in areas where molochs live

4 check the internet for opinions from other scientists

4.6.3.6 Extinction

Question 16

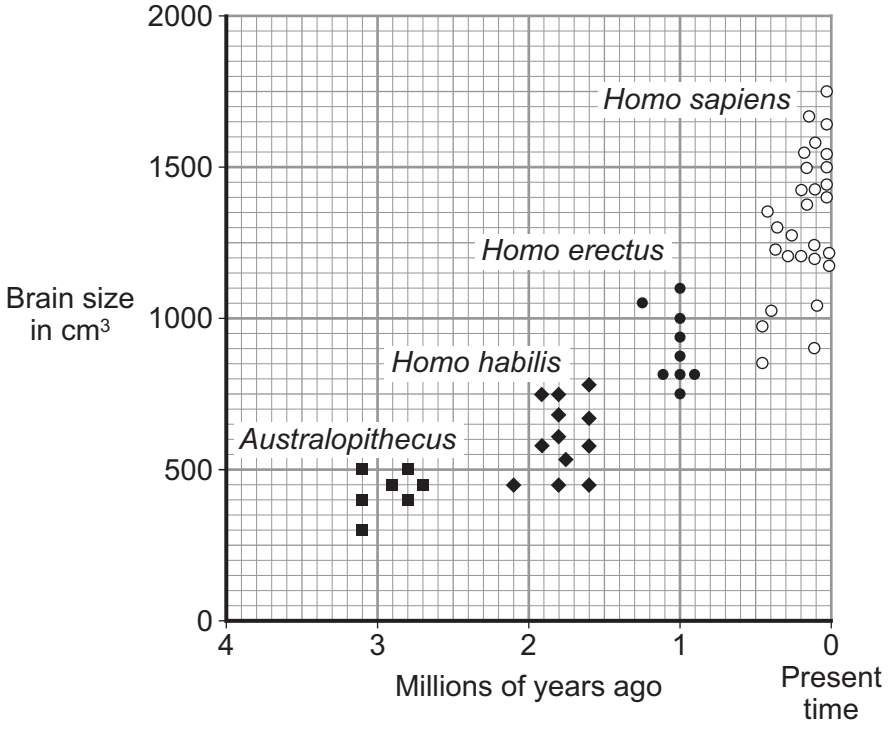
June 2010 | BLY1BP | Original Q7 | Legacy

QUESTION SEVEN

Modern humans belong to the species *Homo sapiens*. Many people think that modern humans evolved from more primitive species. Three of these primitive species were *Australopithecus*, *Homo habilis* and *Homo erectus*. These three species are now extinct.

Scientists investigated the brain size of several specimens from each of the species.

The graph shows their results.



7A The ranges of brain size of *Homo sapiens* and *Homo erectus* overlap by . . .

1 200 cm^3

2 250 cm^3

3 300 cm^3

4 1000 cm^3

7B From this data, the time over which *Australopithecus* existed was . . .

1 0.2 million years.

2 0.4 million years.

3 3.1 million years.

4 3.3 million years.

4.6.3.6 Extinction

Question 16 · continued

7C Which one of the following is correct?

The fossil data for . . .

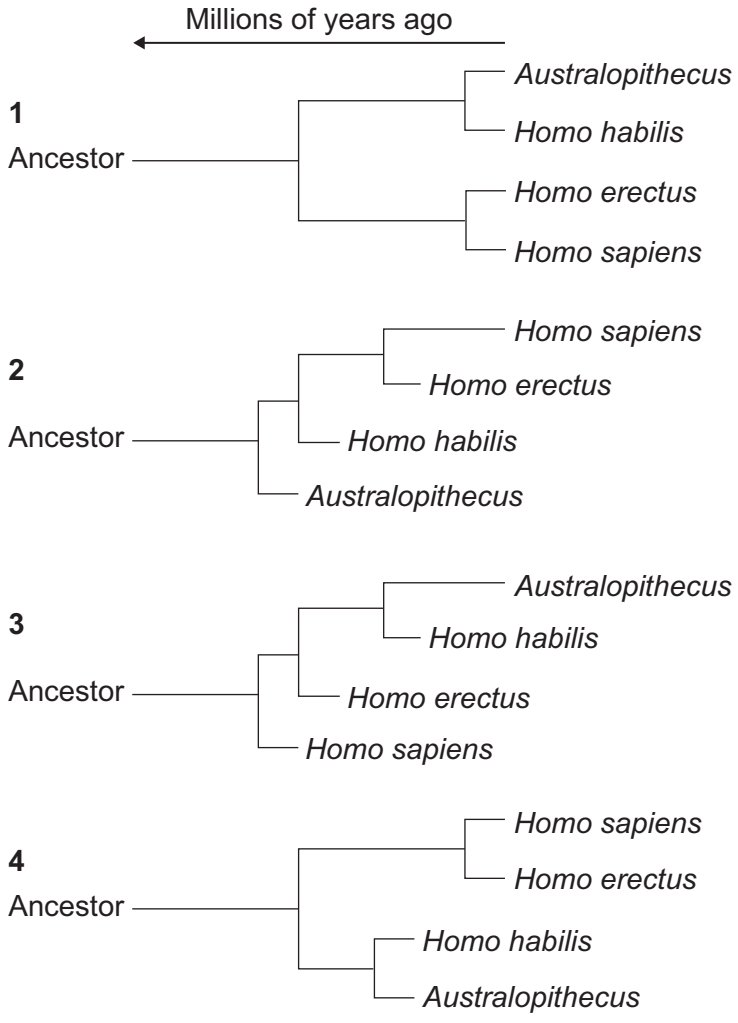
1 *Australopithecus* can be considered least reliable because the fewest number of skulls have been found.

2 *Homo habilis* can be considered to be most reliable because they were fossilised over the longest period of time.

3 *Homo erectus* can be considered most reliable because they were fossilised over the shortest period of time.

4 *Homo sapiens* can be considered least reliable because they were fossilised most recently.

7D Which evolutionary tree is supported by the evidence in the graph?



4.6.3.6 Extinction

Question 17

November 2010 | BLY1BP | Original Q6 | Legacy

QUESTION SIX

There are about 1.4 million different animal species and 400 000 different plant species known to be alive today.

About 720 000 of these known plant and animal species are found in tropical rainforests.

The extinction rate of tropical forest species is increasing.

6A What percentage of the world's known species of plants and animals is found in tropical rainforests?

1 29 %

2 40 %

3 51 %

4 70 %

6B What term is used to describe the range of different species in an environment such as a tropical rainforest?

1 selection

2 variation

3 biodiversity

4 evolution

6C What is the most likely cause of the extinction of these species in the tropical rainforests?

1 acid rain

2 the evolution of new predators

3 genetically modified (GM) crops

4 loss of habitat

6D Extinction happens when all the adults die before . . .

1 passing their genes on to the next generation.

2 enough fossil evidence is produced.

3 it is known what use they can be to humans.

4 their genes have been able to mutate.

4.6.3.6 Extinction

Question 18

November 2010 | BLY1BP | Original Q9 | Legacy

QUESTION NINE

The drawings show two different species of butterfly.



Amauris



Hypolimnas

Many types of bird can eat both species.

- *Amauris* is poisonous to birds.
- *Hypolimnas* is **not** poisonous to birds.

There are many other examples of 'pairs' of poisonous species and non-poisonous species that look similar.

9A The most likely explanation for the similarity between poisonous and non-poisonous butterflies is that . . .

1 different species interbreed over many generations. This is how different species evolve.

2 the products of asexual reproduction can have slight differences. Environmental variation causes these differences.

3 non-poisonous species look like the poisonous species, and so the non-poisonous butterflies are more likely to survive and breed.

4 poisonous butterflies have evolved a defence mechanism against predators.

9B In the nineteenth century, some people did not accept Darwin's theory of natural selection.

Which of the following was **not** a reason to reject the theory?

1 It undermined the idea that God made all animals and plants.

2 There was insufficient fossil evidence to convince some scientists.

3 The mechanism of inheritance was not known at the time.

4 Lamarck's theory that organisms can inherit acquired characteristics was already well established.

4.6.3.6 Extinction

Question 18 · continued

9C Fossils of early life-forms are not discovered very often because . . .

1 the early life-forms are all now extinct because of evolution.

2 the soft bodies of the early life-forms did not fossilise well.

3 the early life-forms have all evolved into more complex species.

4 the early life-forms are in rocks too deep in the Earth's crust and cannot be found.

9D Which of the following would **not** be a reason for the extinction of a species of butterfly?

1 the evolution of a new predator

2 the evolution of a disease organism

3 mutation in one individual butterfly

4 a 2°C rise in atmospheric temperature

END OF TEST

4.6.3.6 Extinction

Question 19

January 2011 | BLY1H | Original Q8 | Legacy

8 Scientists have brought an extinct species of mountain goat, the Pyrenean ibex, 'back to life'. These scientists used skin cells from preserved Pyrenean ibex in cloning experiments.

The Scientists:
- removed the nuclei from domestic goat egg cells
- transferred cell nuclei from the skin cells of the Pyrenean ibex into domestic goat egg cells
- used the domestic goats as surrogate mothers for the embryos that developed.

The scientists made 439 cloned embryos, but only 57 were suitable for transfer into the surrogate goat mothers. Only seven of the goats got pregnant and only one live offspring was born.

Some biologists are very worried about using cloning to preserve endangered animals, because cloned animals often have developmental problems. Some endangered animals are difficult to breed in captivity. For these animals cloning is another way to continue the genetic line.

The biggest threats to endangered animals today are habitat loss, illegal hunting, pollution and climate change. Many scientists say that cloning is not as important as trying to preserve the wild places on Earth. The wild places are being lost very quickly and the animals and plants living in the wild places are dying out.

8 (a) The Pyrenean ibex was 'brought back to life'.

How is this process different from using adult cell cloning to clone a pet animal?

.....

.....

(1 mark)

4.6.3.6 Extinction

Question 19 · continued

8 (b) Evaluate the use of adult cell cloning to conserve endangered species.

Use the information given and your own knowledge and understanding.

Remember to give a conclusion to your evaluation.

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(4 marks)

5

4.6.3.6 Extinction

Question 20

June 2011 | BLY1BP | Original Q1 | Legacy

QUESTION ONE

The modern theory of evolution is based mainly on Charles Darwin's work.

Match words, **A**, **B**, **C** and **D**, with the numbers **1**–**4** in the sentences.

A extinction

B mutation

C reproduction

D variation

The range of characteristics we can see in a species is known as . . . **1** . . . .

This range of characteristics has been brought about by . . . **2** . . . .

Characteristics that give advantages are passed on during . . . **3** . . . .

Characteristics that are disadvantages may result in . . . **4** . . . .

4.6.3.6 Extinction

Question 21

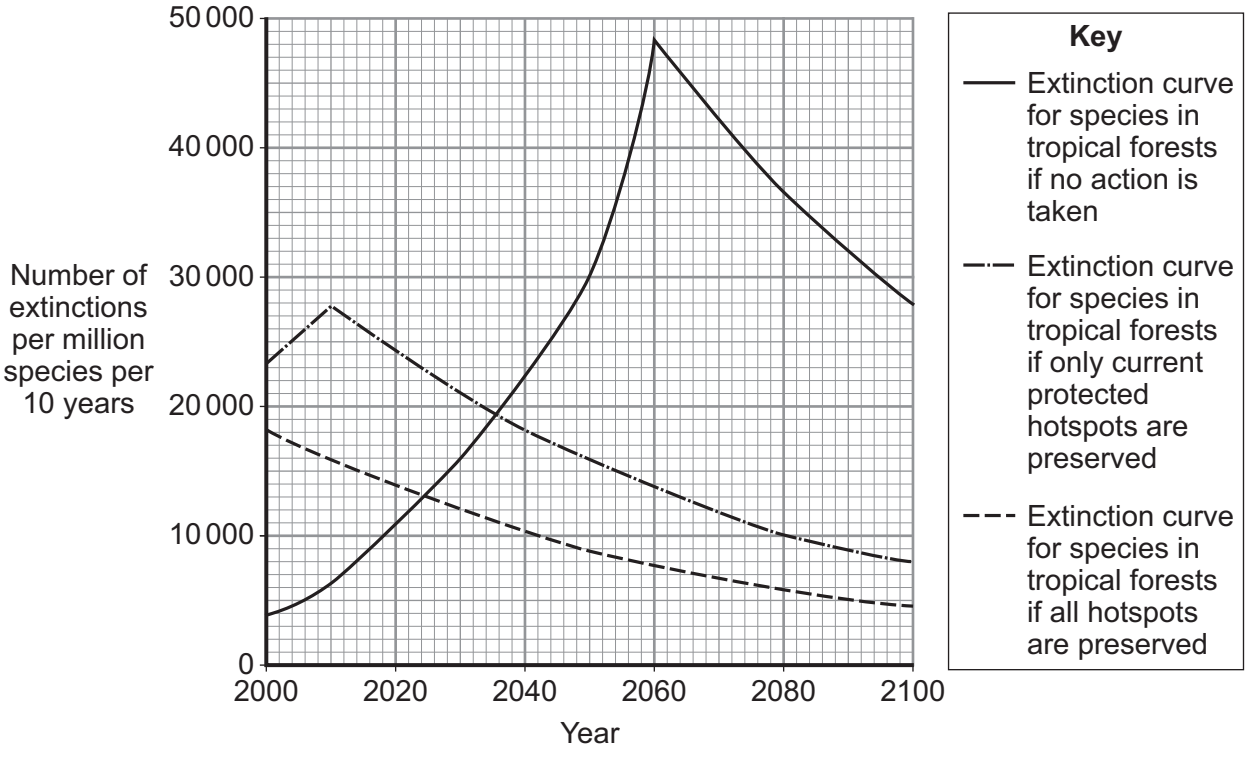
June 2011 | BLY1BP | Original Q6 | Legacy

QUESTION SIX

The graph shows the predicted number of extinctions of species in tropical forests in the 21st century.

A decade is 10 years.

Hotspots are areas with a very large biodiversity.



Scientists estimate that now there are about 10 000 000 species in the tropical forests.

6A How many of these species are likely to become extinct in the decade beginning 2010 if only current protected hotspots are preserved?

1 80 000

2 180 000

3 280 000

4 480 000

4.6.3.6 Extinction

Question 21 · continued June 2011 | BLY1BP | Original Q6 | Legacy

6B If no action is taken, the number of extinctions in tropical forests will begin to drop after 2060.

This is because . . .

1 Earth is warming up.

2 there will be less pollution.

3 we will have found new sources of energy.

4 most of the hotspots will have been destroyed by 2060.

6C Disease has little effect as a cause of organisms becoming extinct.

This is probably because . . .

1 new diseases do not have much effect.

2 immunity to disease is inherited.

3 diseases cannot spread from one species to another.

4 organisms have developed resistance to most diseases.

6D Alien species are plants and animals that have been introduced to a new environment.

Alien species may cause extinction of organisms in tropical forests because alien species . . .

1 have the same distribution in the forests.

2 are similar to existing predators in the forests.

3 are similar to existing competitors in the forests.

4 may be better adapted to the forests.

4.6.3.6 Extinction

Question 22

January 2012 | BL1HP | Original Q5 | Legacy

5 The Blue-moon butterfly lives on a small island called Samoa, in the Pacific Ocean.



In 2006 Blue-moon butterflies almost became extinct.

Wolbachia bacteria killed males before they could hatch from eggs. Only females were resistant to the bacteria.

In 2006 the number of male Blue-moon butterflies had decreased to only 1 per cent of the population. Two years later, the number of males was equal to the number of females.

5 (a) Scientists believe that a change in a gene suddenly occurred to make some males resistant to the bacteria.

What scientific term describes a change in a gene?

.....

(1 mark)

5 (b) The numbers of male Blue-moon butterflies in the population increased quickly after the new form of the gene had appeared.

Suggest why.

.....

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.....

.....

(4 marks)

5

4.6.3.6 Extinction

Question 23

June 2015 | BL2HP | Original Q6 | Legacy

6 (a) Evidence about extinct species of animals and plants comes from fossils.

Figure 8 is a photograph of a fossil of a bird-like animal called *Archaeopteryx*. *Archaeopteryx* lived about 150 million years ago.

Figure 8



6 (a) (i) Suggest how the fossil of *Archaeopteryx* was formed.

[2 marks]

.....

.....

.....

.....

6 (a) (ii) Scientists have found other fossils of the ancestors of modern birds, but the fossil record is very incomplete.

Suggest **two** reasons why there are gaps in the fossil record.

[2 marks]

1 .....

.....

2 .....

.....

4.6.3.6 Extinction

Question 23 · continued

6 (b) There are many different species of bird on the Earth today.

Describe how these different species may have evolved from an ancestor such as *Archaeopteryx*.

[4 marks]

.....

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8

4.6.3.6 Extinction

Question 24

June 2017 | BL2HP | Original Q7 | Legacy

7 There are nearly 9 million species of organisms alive on Earth today.

7 (a) (i) What is a species?

[2 marks]

7 (a) (ii) How do fossils provide evidence that species alive today have evolved from simpler organisms?

[2 marks]

7 (b) **Figure 7** shows three species of flightless birds that are alive today.

Each of the three species lives on a different continent.

Figure 7

Rhea (South America)



Emu (Australia)



Ostrich (Africa)



4.6.3.6 Extinction

Question 24 · continued

Many scientists now believe that each of these species evolved from an ancestral species of bird that could fly. This happened after the extinction of the dinosaurs, about 65 million years ago. Many of the dinosaurs were meat eaters.

Although these three birds are different species, they have many features in common.

Suggest how these different species of flightless birds might have evolved to have many features in common.

[6 marks]

10

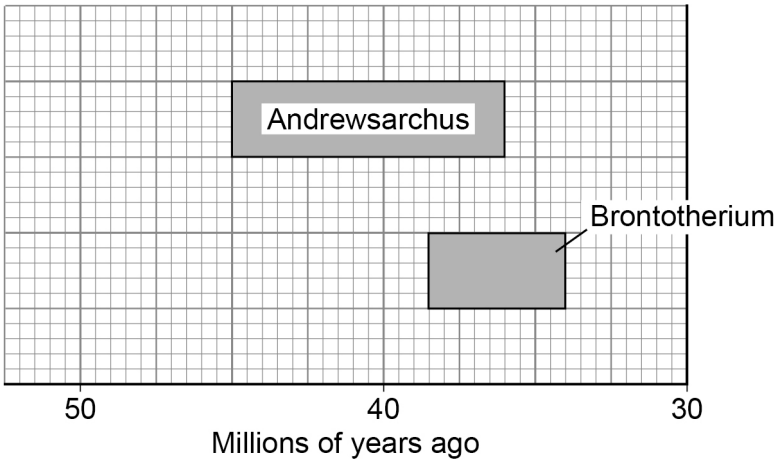
4.6.3.6 Extinction

Question 25

November 2020 | 8461/2H | Original Q8

0 8 **Figure 8** shows when two mammals existed in Asia.

Figure 8



0 8 . 1 Determine the number of years both Andrewsarchus and Brontotherium existed together.

[2 marks]

Time = _____ years

4.6.3.6 Extinction

Question 25 · continued

0 8 . 2 The oldest fossils of human ancestors found in this area are 700 000 years old.

Andrewsarchus was a carnivore and Brontotherium was a herbivore.

Suggest how the extinction of Andrewsarchus could have resulted in the extinction of Brontotherium.

[3 marks]

0 8 . 3 Information about extinct animals is often **not** clear because the fossil record is incomplete.

Give **three** reasons why the fossil record is **not** clear for older species.

[3 marks]

1

2

3

Question 8 continues on the next page

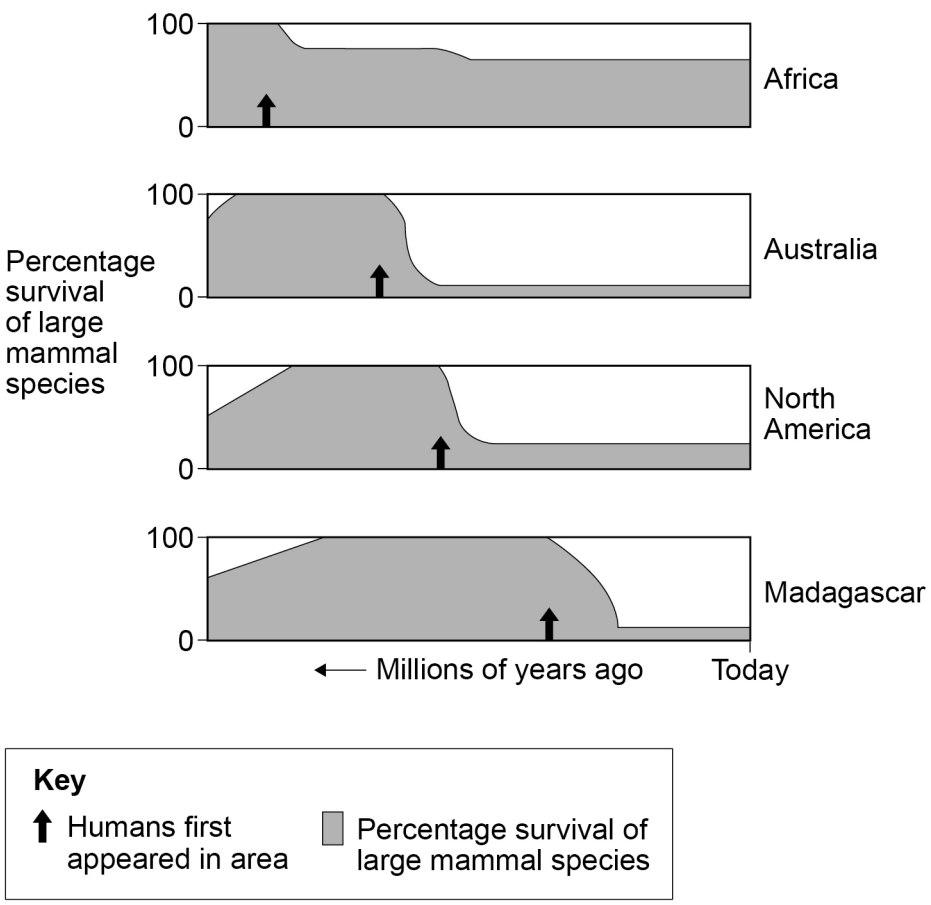
4.6.3.6 Extinction

Question 25 · continued

Figure 9 shows the percentage (%) survival of large mammal species in four areas of the world.

The time at which humans first appeared in each of the four areas is also shown.

Figure 9



4.6.3.6 Extinction

Question 25 · continued

A mass extinction is a rapid decrease in biodiversity on Earth.

0 8 . 4 A student stated:

'The data in **Figure 9** shows that humans caused mass extinctions.'

Evaluate the student's statement.

[6 marks]

Question 8 continues on the next page

4.6.3.6 Extinction

Question 25 · continued

November 2020 | 8461/2H | Original Q8

0 8 . 5 Give **one** disadvantage and **one** advantage of mass extinction events.

Answer in terms of evolution.

[2 marks]

Disadvantage _____

_____

Advantage _____

_____

16

4.6.3.6 Extinction

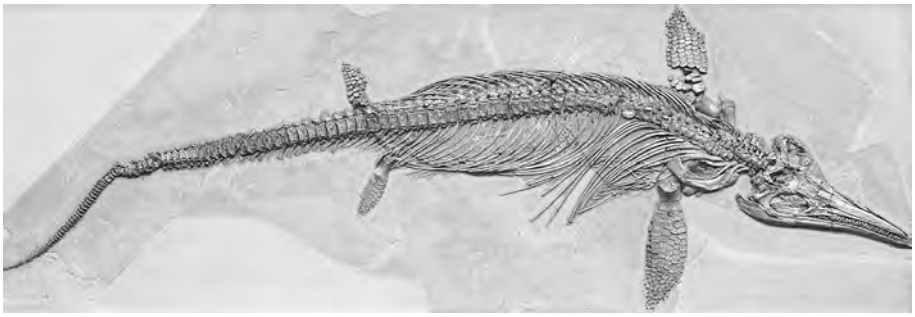
Question 26

June 2025 | 8461/2H | Original Q1

0 1 Ichthyosaurs are reptiles that lived in the sea millions of years ago.

Figure 1 shows the fossilised remains of an ichthyosaur.

Figure 1



0 1 . 1 Suggest how the fossil in **Figure 1** was formed after the ichthyosaur died.

[2 marks]

0 1 . 2 The length of the image of the ichthyosaur in **Figure 1** is 120 mm.

The real length of the ichthyosaur was 17 times longer than the image in **Figure 1**.

Calculate the real length of the ichthyosaur.

Give your answer in metres.

[3 marks]

Real length of ichthyosaur = _____ metres

4.6.3.6 Extinction

Question 26 · continued

0 1 . 3 **Table 1** gives the classification of the ichthyosaur in **Figure 1**.

Table 1

Classification group	Name
Kingdom	Animalia
	Chordata
Class	Reptilia
Order	Ichthyosauria
	Ichthyosauridae
Genus	Ichthyosaurus
Species	intermedius

Complete **Table 1**.

[2 marks]

Choose answers from the box.

Community	Family	Mammal	Phylum	Population

0 1 . 4 Ichthyosaurs were predators.

Ichthyosaurs are now extinct.

Scientists think that extinction of the ichthyosaurs was caused by increased competition with other predators for food.

Suggest **two other** possible causes of extinction of the ichthyosaurs.

[2 marks]

1 _____

_____

2 _____

_____

9