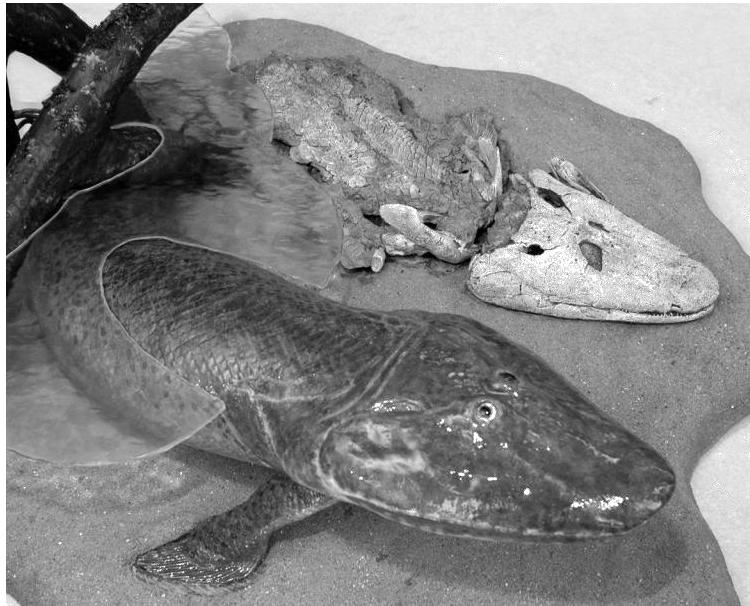


Fossils and Extinction

Q:1 An animal called Tiktaalik became extinct about 360 million years ago.

The photograph shows the fossilised skeleton of Tiktaalik and a model of what scientists think Tiktaalik looked like.



(a) Scientists found only the fossilised skeleton of Tiktaalik.

Explain why.

(2 marks)

(b) Scientists think that Tiktaalik lived mostly in water, but that it was one of the first animals to be able to move onto land.

Use evidence from the photograph to suggest why.

(2 marks)

Q:2 Some organisms are in danger of extinction.

The photograph shows an African elephant feeding on tree leaves.



(a) Read the information about elephants and humans in Africa.

- The African elephant is the largest land animal.
- The African elephant feeds on lots of leaves.
- Adult African elephants have no natural predators.
- Elephants are killed by poachers for their ivory tusks.

- African elephants live for about 70 years.
- Most African elephants live in large herds.
- Land available to elephants is disappearing rapidly.

The African elephant is now extinct in many parts of Africa.

Use information from the list to give three reasons why.

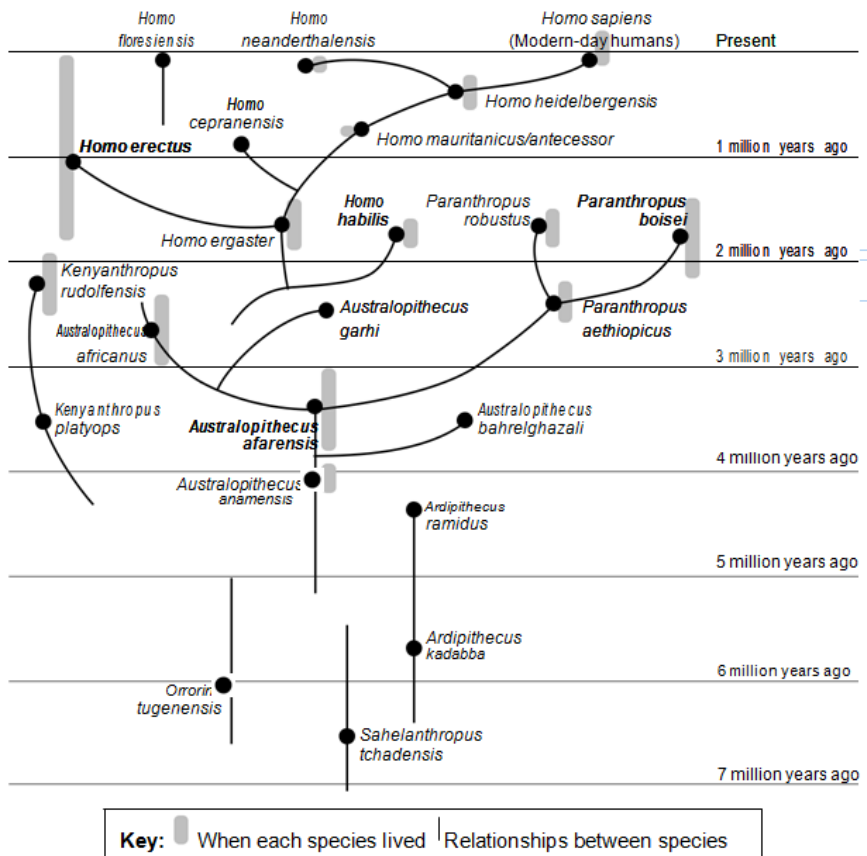
1. _____

2. _____

3. _____

(3 marks)

Q:3 The diagram shows an evolutionary tree for humans. The diagram is based on a study of fossils.



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

_____ million years ago.

(1 mark)

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

(1 mark)

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

(1 mark)

(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 _____

2 _____

(2 marks)

(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 _____

2 _____

(2 marks)

Q:4 When animals die, they usually fall to the ground and decay. In 1977 the body of a baby mammoth was discovered.

The baby mammoth died 40 000 years ago and its body froze in ice. The picture shows the mammoth.



(a) Explain why the body of the baby mammoth did not decay.

(2 marks)

(b) Mammoths are closely related to modern elephants.

The pictures show these two animals.

What scientists think a

mammoth looked like



Modern elephant



Mammoths are extinct. What does extinct mean?

(1 mark)

Q:5 The photograph shows a fossil footprint. The fossil was found in a rock at the bottom of a shallow river. Scientists believe this is the footprint of a dinosaur. The dinosaur was alive 110 million years ago.



(a) (i) Suggest how the fossil shown in the photograph was formed.

(1 mark)

(a) (ii) Fossils may also be formed by other methods.

Describe one other method of forming a fossil.

(1 mark)

(b) Dinosaurs are now extinct.

Give two factors that can cause extinction.

1 _____

2 _____

(2 marks)

(c) How can fossils give evidence for evolution?

(1 mark)

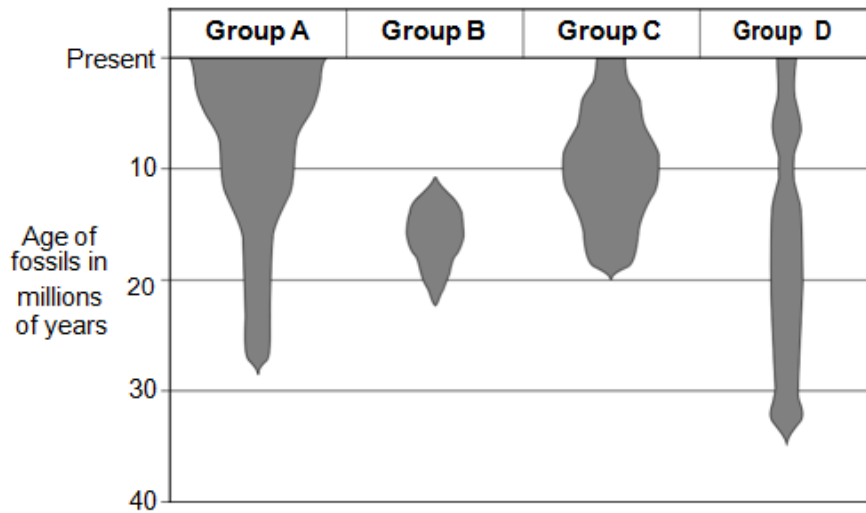
(d) Scientists are uncertain about how life began on Earth.

Why?

(1 mark)

Q:6 In the Grand Canyon, scientists have found fossils of several different groups of organisms.

The diagram shows the number and age of the fossils that the scientists found. The width of each shaded area shows the number of fossils found.



(a) What is a fossil?

(2 marks)

(b) (i) Which group of organisms, A, B, C or D, was the first to evolve?

(1 mark)

(b) (ii) Which group of organisms, A, B, C or D, is now extinct?

(1 mark)

(b) (iii) Give one environmental factor that might have caused this group of organisms to become extinct.

(1 mark)

(c) Scientists suggested that, 10 million years ago, organisms of Group C were more common than organisms from any of the other groups.

What is the evidence for this in the diagram?

(1 mark)

(d) The scientists suggested that the four groups of fossilised organisms evolved from a common ancestor.

Which of the following would provide the best evidence that their suggestion is correct?

Tick (☑) one box.

Statement Tick (☑)

All the groups lived in the same area.

Fossils from each group were found in the same rock layer.

Members of the groups have similar physical structures.

(1 mark)

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

(3 marks)

(b) The photographs show two species of gull.

Herring gull (*Larus argentatus*)

Lesser black-backed gull (*Larus fuscus*)



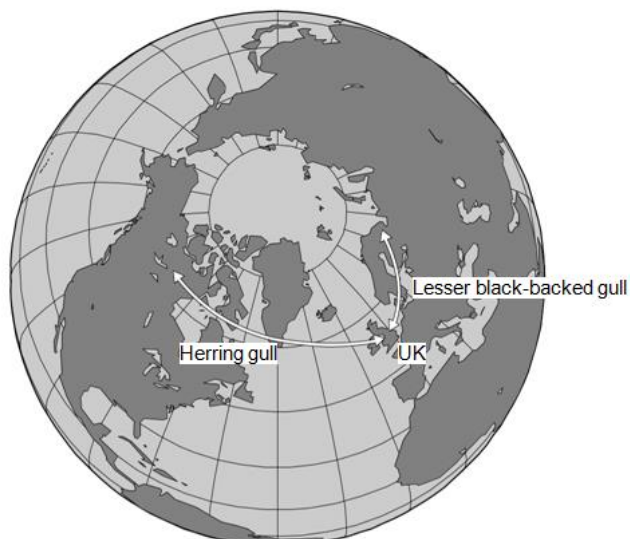
Photograph: © John Howard/Science Photo Library



Photograph: © John Devries/Science Photo Library

Both species are now found in the UK but the two species cannot interbreed with each other. Scientists believe that these two species have evolved from a common ancestor.

The map on the next page shows a view of the Earth from above the North Pole.



The map also shows where these two species are found.

(b) Suggest an explanation for the development of these different species.

(6 marks)

TOTAL MARKS=39