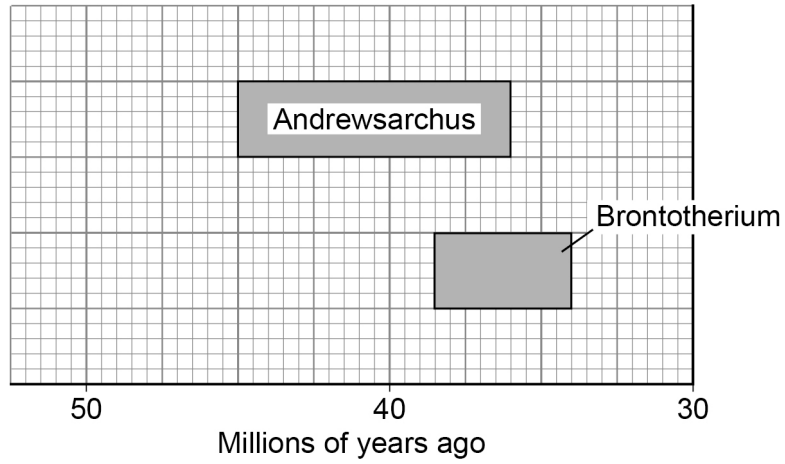**0 8** **Figure 8** shows when two mammals existed in Asia.

Figure 8

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

[2 marks]

_____

_____

_____

Time = _____ years

Do not write outside the box

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]

_____

_____

_____

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_____

_____

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.
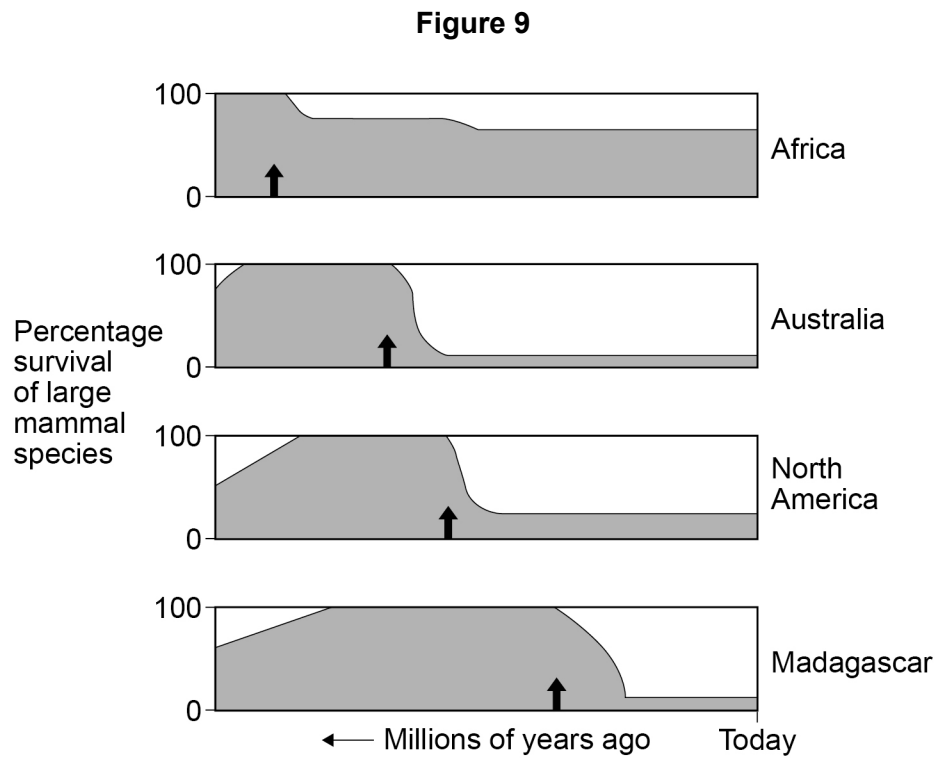
[3 marks]

1 _____

_____

2 _____

_____

3 _____

_____

Question 8 continues on the next page

Turn over ▶

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

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]

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Question 8 continues on the next page

Turn over ▶

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

Answer in terms of evolution.

[2 marks]

Disadvantage

Advantage

16

END OF QUESTIONS

Question	Answers	Extra information	Mark	AO / Spec. Ref.
08.1	38 500 000 – 36 000 000	allow 500 000 $\times$ 5	1	AO2 4.6.3.6
	2 500 000 (years) **or** 2.5 million (years)		1	
		if no other mark awarded, allow 38.5 – 36 = 2.5 **or** 0.5 × 5 = 2.5 for **1** mark		

08.2	(extinction of Andrewsarchus) led to population increase / evolution of another predator	allow idea of a new predator	1	AO2 4.6.3.6 4.7.1.1 4.7.1.3 4.7.4.1
	because Andrewsarchus no longer competing for food / resources	allow because Andrewsarchus no longer eating another predator	1	
	other predator (population) hunted more Brontotherium		1	
	or			
	(extinction of Andrewsarchus) led to population increase / evolution of another herbivore (previously eaten by Andrewsarchus) (1)			
	because Andrewsarchus no longer predating (other) herbivore (1)			
	more competition with other herbivores (1)			
	or			
	(extinction of Andrewsarchus so) Brontotherium are not eaten so therefore the population increases (1)			
	so much that the food source decreases (1)			
	Brontotherium compete with each other so much that they all die (1)			
		max **2** marks if reference to hunted by humans **or** still killed by Andrewsarchus **or** reference to climate change or factors relating to climate change		

08.3	any **three** from: • fossils buried deep(er) so hard(er) to find • fossils smaller so harder to find • more likely to be destroyed by geological activity / earthquakes / erosion • oldest organisms were soft-bodied so most of the tissue decayed • dating older fossils is hard • older eras less researched by scientists because less to find • (usually) unclear when one species evolves into another species (because not enough fossils found)	allow oldest organisms were soft-bodied so there were very few fossils	3	AO2 4.6.3.5

Question	Answers	Mark	AO / Spec. Ref.
08.4	**Level 3:** A judgement, strongly linked and logically supported by a sufficient range of correct reasons, is given.	5–6	AO3 4.6.3.6 4.7.1.2 4.7.1.3
	Level 2: Some logically linked reasons are given. There may also be a simple judgement.	3–4	
	Level 1: Relevant points are made. They are not logically linked.	1–2	
	No relevant content	0	
	Indicative content **Supporting the statement** • decrease (in large mammals) is large(r) in some areas • decrease (in large mammals) occurs when humans enter areas • decrease occurs at different times in the areas, so not suggestive of worldwide climate change or meteor impact or volcanic activity • decrease is not (always) immediate, suggesting human population grew, then had impact **or** decrease accelerates as human population grows **Not supporting the statement** • only shows large mammals **or** does not show other species • correlation does not mean causation • there were always some left so it wasn't a 'mass extinction' • decrease could have been due to other factors / named • no information about climate change / abiotic factors • no information about predators / pathogens / food sources / other biotic factors • decrease (in mammal population) in Africa (after humans present) is small • decrease (in mammal population) in Madagascar (after humans present) was gradual / slow • only shows data for four areas of the world **or** no data shown for other areas of the world Answers in level **3** must refer to evidence supporting **and** not supporting the statement		

08.5	(disadvantage) any **one** from: - loss of potential, future biodiversity - reduction in range of alleles (advantage) allows evolution of new species / varieties	allow loss of biodiversity allow reduction in gene pool allow opportunity for speciation	1 1	AO3 4.6.3.6
Total			**16**	