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90719



NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA



National Certificate of Educational Achievement
TAUMATA MĀTAURANGA Ā-MOTU KUA TAEA

Level 3 Biology, 2005

90719 Describe trends in human biological and cultural evolution

Credits: Three
9.30 am Tuesday 15 November 2005

Check that the National Student Number (NSN) on your admission slip is the same as the number at the top of this page.

You should answer ALL the questions in this booklet.

If you need more space for any answer, use the page(s) provided at the back of this booklet and clearly number the question.

Check that this booklet has pages 2–8 in the correct order and that none of these pages is blank.

YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

For Assessor's use only		Achievement Criteria		
Achievement		Achievement with Merit		Achievement with Excellence
Describe trends in human biological and cultural evolution.	<input type="checkbox"/>	Explain trends in human biological and cultural evolution.	<input type="checkbox"/>	Discuss trends in human biological and cultural evolution.
Overall Level of Performance				<input type="checkbox"/>

You are advised to spend 35 minutes answering the questions in this booklet.

QUESTION ONE

Last year scientists excavating a cave site on the island of Flores in Indonesia found the remains of an extinct group of very small people who were possibly alive until 13 000 years ago. Views of the skull they found are shown below. The second view shows a modern human skull for comparison.

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Homo floresiensis
<http://www.talkorigins.org/faqs/homs/lb1.jpg>
<http://nature.com/news/specials/flores>

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Homo sapiens (modern human)
<http://nature.com/news/specials/flores>

Based on features of the skull and the rest of the bones found with the skull, the remains have been placed in a separate species, *Homo floresiensis*. This species seems to be more closely related to *Homo erectus* than to *Homo sapiens*.

(a) Describe one feature of the **skull** found in the cave that would show that the species it belonged to walked upright.

(b) Without considering the overall size of the skull, the scientists knew that the skull belonged to a hominid of the genus *Homo*. They also decided that the species *Homo floresiensis* more closely resembles *Homo erectus* than *Homo sapiens*.

Apart from overall skull size, compare and contrast features **shown in the photographs** of the two skulls, and the evolutionary trends of *Homo erectus* and *Homo sapiens*, that support the scientist's conclusions.

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(c) The tools found associated with the remains were Upper Paleolithic. Explain why scientists would not expect to find Upper Paleolithic tools with *Homo floresiensis*.

(d) Studies of the inside of the skull show that Wernicke's area of the brain was well developed.

(i) Describe the function of Wernicke's area of the brain.

(ii) Explain how Wernicke's area of the brain would be an advantage to the species for the hunting of animals that were very large in comparison to *Homo floresiensis*.

(e) Explain why charred animal remains found with the *Homo floresiensis* remains could have been expected by the scientists studying them.

(f) Describe how the vertebral column of the genus *Homo* differs from that of a living ape.

(a) The youngest of the bones of the now extinct *Homo floresiensis* is 13 000 years old. The way the findings fit in with the genus *Homo* family tree is shown in the diagram below.

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http://nationalgeographic.com/news/2004/10/1027_041027_homo_floresiensis.htm

Discuss whether this information better supports the 'Out of Africa' (Replacement) or 'Multiregional' theory of the origin of modern humans.

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(b) During the timeline shown in the *Homo* family tree there was a trend from hunter gatherer to agriculture and the domestication of plants and animals.

(i) Describe another cultural change that the development of agriculture and the domestication of plants and animals brought about.

(ii) The development of agricultural skills brought many advantages to *Homo sapiens*, but there were associated disadvantages too. Explain the consequence of ONE of these disadvantages.

**Extra paper for continuation of answers if required.
Clearly number the question.**

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Question number