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NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

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Level 3 Biology, 2014

91606 Demonstrate understanding of trends in human evolution

9.30 am Thursday 13 November 2014
Credits: Four

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate understanding of trends in human evolution.	Demonstrate in-depth understanding of trends in human evolution.	Demonstrate comprehensive understanding of trends in human evolution.

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 attempt 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 2–10 in the correct order and that none of these pages is blank.

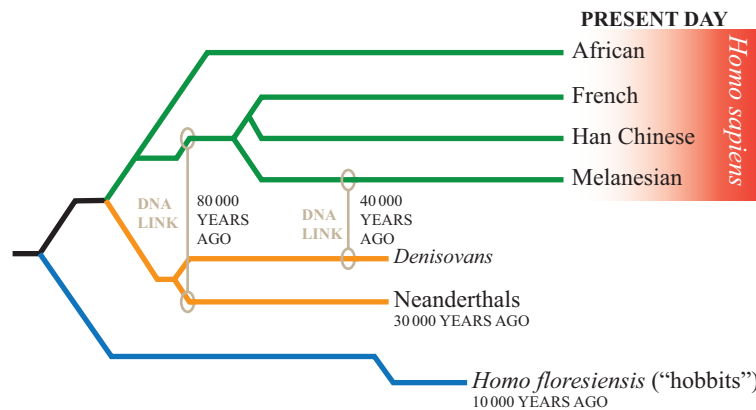
YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

TOTAL

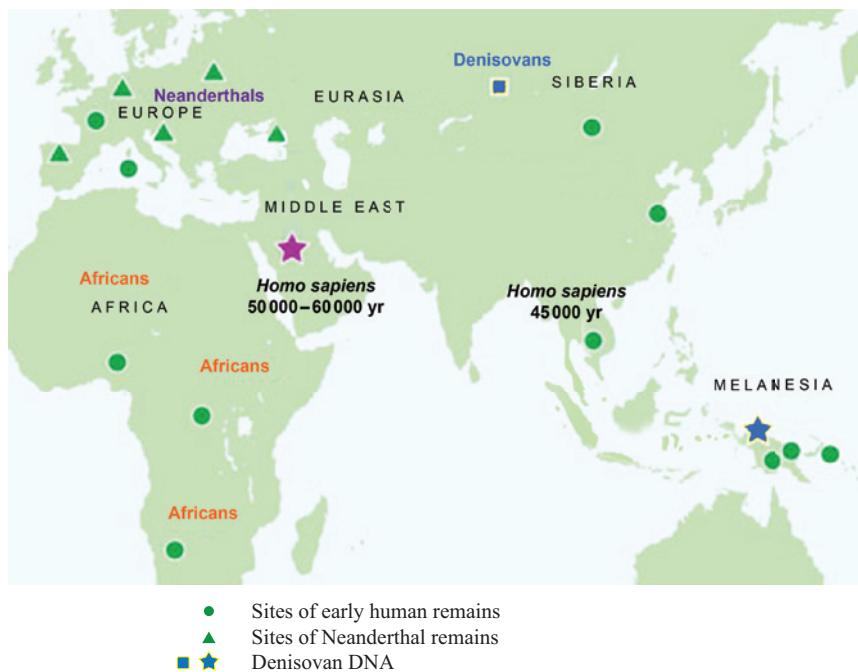
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QUESTION THREE: DISPERSAL OF HOMININS – MORE THAN ONE

Both the sequencing of the Neanderthal genome and genetic evidence (both mitochondrial DNA and nuclear DNA) from the Denisova Cave in Siberia, have brought in new evidence that raises further questions with regards to hypotheses of human dispersal.



Adapted from: <http://io9.com/5939148/new-dna-evidence-could-explain-what-happened-to-the-neanderthals>



Adapted from: <http://www.wired.com/wiredscience/2010/12/denisovans/>

Recent scientific information suggests that:

1. Neanderthals diverged from modern humans between 270 000 and 440 000 years ago.
2. Neanderthals are more closely related to non-Africans than to Africans, and were distributed East-West across central Europe to Asia.
3. Denisovans share a common ancestor with Neanderthals and diverged from them around 640 000 years ago, and were distributed North-South from Siberia to South-East Asia.
4. Denisovans are more closely related to modern Melanesians (from, for example, Papua New Guinea, Australia, Solomon Islands, Vanuatu, and Fiji), which carry an additional 5% of Denisovan DNA.
5. Modern non-African humans have inherited about 2.5% of their DNA from Neanderthals.
6. Evidence of Neanderthal, Denisovan, and modern human occupation can be found in the Denisova cave, though this may be inconclusive.

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