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## Level 3 Biology, 2015

### 91606 Demonstrate understanding of trends in human evolution

2.00 p.m. Monday 23 November 2015  
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 room for any answer, use the extra space provided at the back of this booklet and clearly number the question.

Check that this booklet has pages 2–12 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 ONE**

A distinguishing feature of hominins is habitual bipedalism. Comparisons of skeletal features of modern humans and extant (living) hominids such as the gorilla or chimpanzee, reveal several key features that are associated with the transition from quadrupedal species to bipedal species.

Some of the most important features are shown below.

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Adapted from: Anna Roberts & Maria Sinclair, *ESA Study Guide: Level 3 Biology*  
(Auckland: ESA Publications (NZ) Ltd, 2013), pp 275–277

Discuss the importance of bipedalism in the development of hominins by linking the skeletal features to their adaptive significance.

In your answer:

- describe what is meant by the terms quadruped and biped
- explain how any three of the skeletal features (shown above) provide evidence for the form of locomotion changing to bipedalism
- justify why bipedalism was so significant to the evolution of hominins.

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**There is more space for your  
answer to this question on the  
following page.**



Tool Culture Figure 1	Tool Culture Figure 2	Tool Culture Figure 3
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Discuss the likely impacts that the different tools and fire had on the different hominin species, and the evolutionary trends that can be linked to these developments.

- identify the three tool cultures as shown in the diagrams above, and link a species of hominin to each tool type
- explain the trends shown in the development of the tool cultures above, and how this shows a progression in the cultural evolution of the hominins
- discuss the likely effects that fire and the use and development of tools had on the biological evolution of the hominins.

**There is more space for your answer to this question on the following page.**



### QUESTION THREE

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<http://madamepickwickartblog.com/wp-content/uploads/2012/01/cannibal4.jpg>

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<http://io9.com/how-farming-almost-destroyed-human-civilization-1659734601>

One of the most important milestones in human evolution was the transition from hunter-gatherer to agriculture or farming. Scientists have concluded that it is likely that the transition to farming was due to migration and replacement of existing populations, and not due to cultural transmission from farmers to hunter-gatherer populations.

Discuss the cultural trends and any advantages and disadvantages a transition from hunter-gatherer to agriculture involved.

In your answer you should:

- describe the lifestyle of a hunter-gatherer and the lifestyle of an early farmer
- explain the cultural trends involved in the transition from hunter-gatherer to agriculture
- discuss any advantages and disadvantages a transition to agriculture from hunter-gatherer involved.

**There is more space for your  
answer to this question on the  
following page.**





**Extra paper if required.**  
**Write the question number(s) if applicable.**

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