



ATAR HUMAN BIOLOGY UNIT 4

Task 12: Fossils & Hominid Evolution

Weighting: 5%

Name: _____

There are THREE sections in this test, Multiple Choice, Short Answer and Extended Answer.

This is a closed book assessment (no notes are allowed).

The time allowed to complete the test is 50 minutes.

Write your answers to the Multiple Choice section on the separate answer sheet provided.

Write your answers to the Short Answer and Extended Answer sections in space provided.

	Marks Allocation	Your Total
Multiple Choice	10	
Short Answer	36	
Extended Answer	8	
TOTAL	54	

ATAR HUMAN BIOLOGY UNIT 4

TEST: Fossils and Hominid Evolution

Name: _____

Multiple Choice Answer Sheet

Use a ball point or ink pen to mark an X on the letter that represents the best answer from the choice of answers .

Marks are not deducted for wrong answers.

1. A B C D

6. A B C D

2. A B C D

7. A B C D

3. A B C D

8. A B C D

4. A B C D

9. A B C D

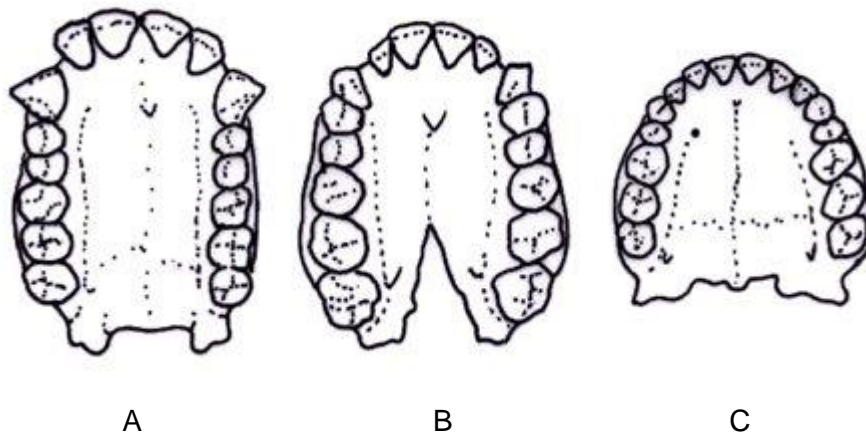
5. A B C D

10. A B C D

Multi choice section

1. Which of the following characteristics mostly clearly distinguishes a quadrupedal Hominid from a bipedal Hominid?
 - a) The length of the vertebral column.
 - b) The depth of the acetabulum.
 - c) The presence of nails.
 - d) The shape of the dental arcade.
2. Tool use is providing an insight to the evolution of hominin lifestyles. Which of the following is suggested to be the main use of the Acheulian tools?
 - a) To build fires.
 - b) To groom.
 - c) To process meat and hides.
 - d) Undetermined.

Question 3 refers to the diagram below of primate dental arcades.



3. Primate dentition, including dental arcade, are suggested to have evolved due to dietary changes. The dental arcade of Primate C has a more parabolic pattern than Primate A because Primate A is:
 - a) human and requires distinct gaps between the incisors and canines.
 - b) an ape and requires larger molars for grinding their food.
 - c) an ape and requires smaller and narrower teeth.
 - d) human and requires smaller molars due to changes in diet.

Below is a list of events that occurred during primate evolution.

- I. *Homo neanderthalensis* (Neanderthals) became extinct
 - II. First primates appear
 - III. *Homo sapiens* appear
 - IV. First hominids appeared
 - V. First members of the genus *Homo* appear.
4. The correct order of events from the earliest to the most recent is:
 - a) iv, ii, v, i, iii.
 - b) ii, iv, v, i, iii.
 - c) iv, ii, v, iii, i.
 - d) ii, iv, v, iii, i.

5. Advantages of bipedal locomotion and erect stance include all, except which, of the following?
- a) Improved heating of the body.
 - b) Free hands to carry food and for tool use.
 - c) Increased size to deter predators.
 - d) Increased range of vision.
6. The average brain size of *Australopithecus* species was:
- a) 200 – 300cc
 - b) 400 – 500cc
 - c) 600 – 700cc
 - d) 800 – 1000cc
7. First evidence of ceremonial burial of dead bodies and religious belief has been found with the fossils of:
- a) *Homo Neanderthal*.
 - b) *Homo sapiens*.
 - c) *Homo erectus*.
 - d) *Homo habilis*.
8. The biggest physical difference between *Homo erectus* and *Homo sapiens* is:
- a) their overall height.
 - b) how straight their legs were.
 - c) the size of the brain.
 - d) a rounded versus pointed jaw, respectively.
9. Neanderthal was thought to be the first *Homo* species to communicate using a large variety of sounds because:
- a) his large brain capacity meant he was able to construct sentences.
 - b) his complex group hunting strategies would have required effective communication.
 - c) the size of his spinal cord meant there was enough nerve attachments going to his lungs so he could speak.
 - d) there was a shorter distance between his pharynx and his larynx.
10. Which species is incorrectly described?
- a) *Australopithecus robustus* -- Lucy; bipedal hominids; ancestral to the genus *Homo*.
 - b) *Homo erectus* -- first hominid to use fire; Old Stone Age culture.
 - c) *Australopithecus Africanis* --bipedal hominid; ape like brain; present in South Africa.
 - d) *Homo habilis* -- first hominid known to use tools.

Question One

Humans as primates are classified in the same taxonomic family as the great apes, Hominids. The species within the family are differentiated by their DNA nucleotide sequences.

- a) Describe the features that a species would need to have to belong to the Primate order.

(3 marks)

- b) Several trends can be seen in the primate order.

- i. Describe the evolutionary trends in the mobility of the fingers that can be seen in the Hominids.

(2 marks)

- ii. How could these trends contribute to the species survival?

(2 marks)

- c) As Hominids evolved their cranial capacity gradually increased. For each of the three functional areas of the cerebral cortex listed below, explain one advantage an increased brain size gave early hominins over other members of the Hominid family.

(3 marks)

Functional area of the cerebral cortex	Advantage
Motor	
Sensory	
Association	

Question Two

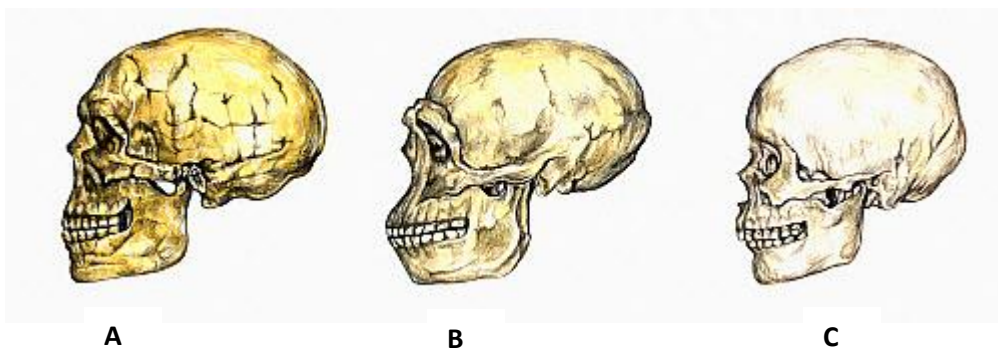
- a) Some primates have anatomical differences that enable them to walk bipedally rather than quadrupedally. Describe two anatomical differences, regarding the pelvis, between a bipedal primate and a quadrupedal primate, and outline how these features enable the Hominid to walk bipedally. (4 marks)

- b) Explain what is thought to have occurred in Africa to create a new ecological niche that was more suitable to a biped than a quadruped. (2 marks)

- c) Discuss four advantages that a Hominin with an erect stance and bipedal locomotion would have over a quadruped in this new ecological environment. (4 marks)

- d) The press recently reported: *'Anthropologists have uncovered ancient fossil footprints in Kenya dating back 1.5 million years, the oldest evidence that indicates our ancestors walked like present-day humans.'* Give two significant features of the footprints that would have led anthropologists to this conclusion. (2 marks)

Question Three



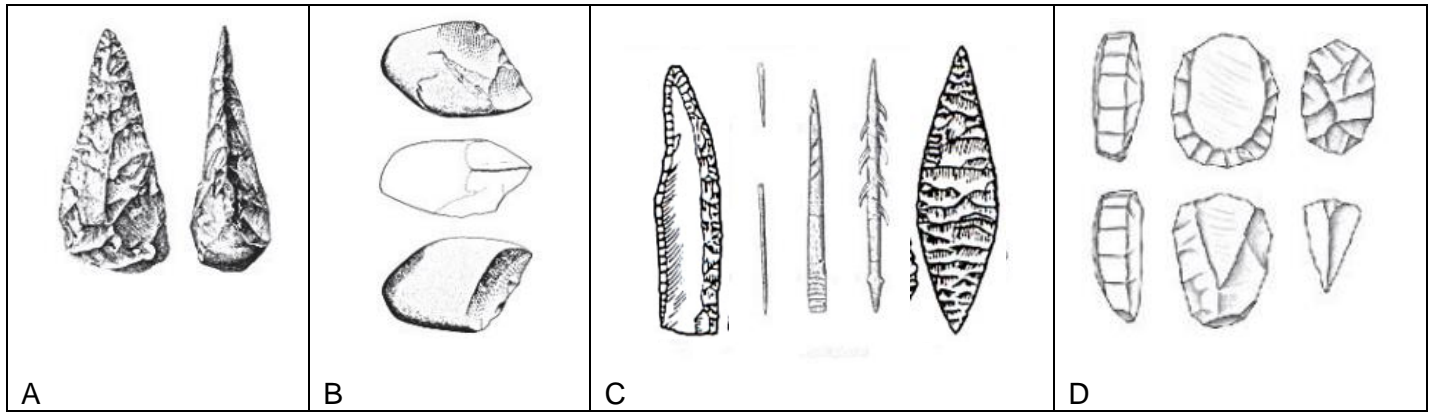
- a) Place the skulls A, B and C in the correct order of most recent to oldest. (1 mark)

- b) One of the skulls belongs to *Homo erectus*. State which skull could be erectus and explain why you made this assumption? (2 marks)

- c) Describe three differences between the skeletons of *Australopithecus Afarensis* and *Homo Erectus* that are not to do with the skull (postcranial skeletons). (3 marks)

[illegible]

Question Four



The following questions refer to the tool diagrams above. The tools have not been drawn to scale.

- a) Identify the tool cultures shown in the diagrams above. (2 marks)

A _____ B _____ C _____ D _____

- b) Explain whether the tools presented in C would be useful index fossils. (2 marks)

- c) Tools are not the only form of evidence that can help us formulate an idea of how these early *Homo* species lived their lives. Describe two other pieces of evidence that could be used and explain what the evidence indicates about the lifestyle of the *Homo* species. (4 marks)

Extended Response

As humans evolved, there was also an increase in cognitive ability and complexity of lifestyle. Discuss the significance of tool development throughout human evolution, and the uses of these tools.

(8 marks)

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