Nikita

26/30

12 Human Biology
HUMAN EVOLUTION

Extended Response

1. Describe 3 features of *H.naledi* that would refute it from being placed in the genus *Homo*. (3)

H. Naledi had very primitive shoulders that were suited for swinging & climbing in trees. H. Naledi also had a flared pelvis (Hadar H. Ma) which is at odds with the Homo's bowl-shaped pelvis. H. Naledi's very small brain of 560 cc refutes it from being placed in the genus Homo. 3.

2. What is the inferred form(s) of locomotion for *H.naledi*? What evidence supports this? (3)

Bipedalism was inferred due to their feet and legs and also the lower end of the pelvis. Due to the primitive shoulders that Naledi exhibits it is also inferred that swinging and climbing was also a form of locomotion for Naledi. and long curved fingers

BRAKEATION

2.

3. Why is South Africa a significant location for such a potentially early hominid? (1)

It was believed that the first Homo resided in East Africa, therefore Naledi's presence in South Africa meant that early Homos migrated around Africa before they were able to make fire and use tools. 1

4. The teeth of *H.naledi* were described as human; describe two features that would place the teeth closer to a human primate rather than apes. (2)

~~Having four cusps~~ Having five cusped molars instead of four cusped molars. Having 32 teeth instead of 36 like apes. Small molars (1)

5. *H.naledi's* cranial capacity places the hominid between which two other hominid groups? (1)

~~Australopithecine~~ Paranthropus Robustus and H. Habilis (1)

* 6. 'Sexual dimorphism' refers to observable differences between the male and female skeleton. State one piece of evidence that suggests that *H.naledi* had sexual dimorphism. (1)

The males had a braincase of 560 cc whilst females had a braincase of 465cc. Males were taller and females shorter and lighter. (1)

7. Physical evidence suggests that *H.naledi* may have used and possibly manufactured primitive tools.

(a) What physical evidence suggests *H.naledi* was a tool user? (1)

H. Naledi's wrist bones and palm indicate tool use. (1)

(b) Name the earliest tool culture associated with hominids. Your response should include a description of the manufacture technique, materials used and uses for the hominid known to use this tool culture. (4)

Oldowan Tool Culture. This was the tool culture of H. Habilis and involved the hammer percussion of river worn pebbles. The hammer percussion technique involved using a stone to chip at another stone creating a one-sided cutting edge. These tools were small and required both precision and power grips. The tools did not have a pre-determined design and were used by Habilis for cutting meat off dead carcasses and cutting open bones for bone marrow. They existed about 2 mya and were probably not used for hunting as Habilis was a scavenger and had a mainly vegetarian diet.

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8. *H.naledi's* foot was described as 'indistinguishable from our own'. Describe 3 features of *H.naledi's* foot and describe each feature's significance to locomotion. (6)

H. Naledi's foot contains a non-opposable big toe which is aligned with all the other toes. This feature is significant as it enables the 'push off' from the heel to the toe.* H. Naledi's foot also contains a longitudinal arch as well as a transverse arch. The transverse arch is significant as it enables weight distribution from heel to big toe which increases balance. H. Naledis foot would also contain a large calcaneus which is significant as its robustness allows prolonged bipedalism to occur for longer periods of time without injury.

2

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1

* It also enables a striding gait which means walking in such a way that the hip and knee are fully extended.

9. State the major cultural feature agreed upon for *H.naledi* in the 3 articles. Describe the evidence suggesting this cultural feature for *H.naledi* and two other pieces of evidence that would further provide evidence supporting this cultural feature in hominid groups. (4)

The major cultural feature agreed upon was that H. Naledi deliberately disposed of their dead. ✓ (1)
Naled's fossils were found in an isolated and very difficult to get to chamber. The bones ✓ (1)
also did not have any teeth marks / claw marks suggesting they were dragged there by predators. There was also at least 15 skeletons ✓ (1)
found in the chamber. This evidence suggests that the body's were deliberately ~~placed~~ placed there. To ~~further provide evidence supporting this cultural feature~~ Presence ✓ (1)
of pollen grains in the chamber could support this claim as it indicates they also threw flowers etc in the grave. Finding another cave chamber with Naledi fossils would also support this claim as it indicates they had a set location for which they disposed of the dead.

10. Name the hominid group known to share the above cultural feature with *H.naledi*. Your response should include 3 other cultural features of this hominid group. (4)

H. Neanderthalis shared this cultural feature. ✓ (1)
Neanderthal made tools called Mousterian tools ✓ (1)
through the use of Levallois Core Technique
They used these sophisticated tools to ✓ (1)
prepare animal hides for clothing / shelter. They are the first to wear clothing in the ✓ (1)
homos due to the Ice Age. Neanderthal built
shelters / huts to protect themselves from ✓ (1)
the environment. Due to their large Broca's
Area they also had a language and
underwent collective learning.