**Human Evolution Short Answers**

*The level of difficulty of each question is given in brackets. This should help you decide how much you will need to write.*

*\* = questions which are an optional extension challenge*

1) Briefly explain the significance of the following human characteristics:

1. Valgus angle b) Arched foot c) Small teeth and jaws

d) “S”-shaped spinal column e) Helpless newborn infants

**(M)**

\*2) Give THREE ways in which reproduction and growth in humans differs from that of other apes.

**(M)**

3) Give FOUR possible advantages of bipedalism.

**(A)**

4) How might the high density of sweat glands and apparent hairlessness of humans be related to bipedalism?

**(M)**

5) What were the TWO most significant changes in the cultural and biological evolution of *Homo habilis*?

**(A)**

6) Give SIX advantages of the use of fire.

**(A)**

\*7) Stone tools were made of flint or obsidian. What properties of these types of rock made them suitable for tool use?

**(A)**

8) *H. erectus* sites contain many animal bones, whereas earlier *H. habilis* sites have few. Describe the likely diet of each species, the way in which they probably obtained food and the tools they would have used.

**(E)**

\*9) What is the distinguishing feature of the Levallois stone tool making technique and why did it require greater intelligence than it did to make Acheulian tools?

**(E)**

10) What evidence is there to suggest that Neanderthals:

1. Cared for the sick and infirm? b) Buried their dead?

**(A)**

\*11) Describe two interesting features of the *H. floresiensis* fossils.

**(A)**

12) What evidence is there to support the idea of organised hunting by *H. heidelbergensis*?

**(A)**

13) Give the name of the tool culture and the species responsible for the following tool types:

1. Tools made of other materials besides stone
2. Tools made from large flakes struck from a prepared core
3. Flakes removed from only part of the original stone
4. Flakes removed from the entire surface so that none of the original surface is left

**(A)**

14) For each of the TWO major theories of *H. sapiens* dispersal, give the name of the hypothesis, ONE key idea and ONE piece of evidence supporting the hypothesis?

**(A)**

\*15) Describe how humans reached:

1. America b) Australia c) New Zealand

**(A)**

16) Describe THREE features of mitochondrial DNA which make it useful in dating human dispersal.

**(A)**

17) Describe THREE benefits and THREE disadvantages of domestication of plants and animals.

**(M)**

\*18) What differences exist between the social structures of nomadic groups and settled groups with domesticated plants and animals?

**(E)**

ANSWERS

1. a - Valgus angle. Knee is underneath COG, prevents falling sideways while walking when one foot lifts off the ground.

 b - Arched foot. Ligament tension acts as a spring to store energy when walking.

 c - Small teeth and jaw. Tools and fire reduced the amount of work done on food so less chewing was necessary.

d - S-shaped spine. Allows COG to be over feet with knees straightened. This minimises muscular energy expended.

e - Helpless newborn. Due to our huge brains and skulls, infants must be born “early” in order to fit through the pelvic canal. Thus, newborns are developmentally unequipped to look after themselves.

2) Human women have hidden menstruation so males don’t know when they are ovulating. Infants are helpless and dependent for a long time (18 years?). Humans have an adolescent growth spurt.

3) Easier to carry infants, food and tools. Absorbs less solar heat at midday. Easier to see predators. Throwing weapons is more accurate. Disperses heat to wind more easily.

4) Increases cooling capacity if upright - more air currents higher from ground.

5) Making tools and brain expansion.

6) Warmth. Cooks food (more nutritious, less bacteria). Hardens tools. Scares predators. Extends day. Social focus.

7) Shear along straight lines, not too hard, abundant, easily recognisable.

8) *H. habilis -* meat scraps, bone marrow and plants, obtained by scavenging, tools used to scrape bones, crack them and crush roots. Tools were pebbles with one side knocked off.

*H. erectus* - more meat obtained by hunting, tools used to butcher animals (maybe not to kill them though…). Tools were bifaced handaxes.

9) Levallois requires seeing the final product in the mind as it does not exist until the final blow. It therefore requires some imagination and planning to see and create something that does not yet exist.

10) a) sick and infirm - Old Man of La Chapelle and Nandy had withered arm, leg deformities and was also very old - 50.

 b) burial - pollen evidence suggests flowers in burial, plus complete skeletons indicated they were protected from scavengers.

11) The Hobbit was extremely short ~1m, chimp-sized brain, extremely old (94,000-120,000 ya), must have got there by boat

12) Large numbers of animals like horses at the foot of cliffs and animals like mammoths in bogs.

13) Upper paleolithic - H. sapiens, Mousterian - H. neanderthalensis, Oldowan - H. habilis, Acheulean - H. erectus.

14) Multiregional - gradual evolution in separate areas with gene flow - intermediate fossils. Out of Africa/Replacement - recent H. sapiens migration from east Africa to replace other species - mtDNA, genetic variation, y chromosome.

15) a - land bridge, b - rafting after disaster, c - navigation of seacraft

16) It follows maternal line only, no recombination, more abundant, known mutation rate is fast due to no proofreading.

17) Fresh meat, milk and hair, work animals, trading, abundance of palatable nutritious plants, plants that store well would see them through winter. Disadvantages = disease, risk, lack of variety, effort.

18) In settled groups there is more leisure time, more accumulation of wealth/goods, more specialisation into secondary and tertiary industry and politics.