

次の英文を読んで、下の設問に答えなさい。

(1) their many differences, all human species share several defining characteristics. Most notably, humans have extraordinarily large brains compared to other animals. Mammals weighing 130 pounds have an average brain size of 12 cubic inches. The earliest men and women, 2.5 million years ago, had brains of about 36 cubic inches. Modern Sapiens sport a brain averaging 73-85 cubic inches. Neanderthal brains were even bigger.

(2) That evolution should select for larger brains may seem to us like, well, a no-brainer. We are so *enamoured of our high intelligence that we assume that when it comes to cerebral power, more must be better. But if that were the (3), the *feline family would also have produced cats who could do *calculus, and frogs would by now have launched their own space program. Why are giant brains so rare in the animal kingdom?

[A] It's not easy to carry around, especially when encased inside a massive skull. It's even harder to fuel. In *Homo sapiens*, the brain accounts for about 2-3 per cent of total body weight, but it consumes 25 per cent of the body's energy when the body is at rest. By comparison, the brains of other apes require only 8 per cent of rest-time energy. Archaic humans paid for their large brains in two ways. Firstly, they spent more time in search (4) food. Secondly, their muscles *atrophied. Like a government diverting money from defence to education, humans diverted energy from biceps to neurons. It's hardly a foregone conclusion that this is a good strategy for survival on the savannah. A chimpanzee can't win an argument with a *Homo sapiens*, but the ape can rip the man apart like a rag doll.

[B] Today our big brains pay (5) nicely, because we can produce cars and guns that enable us to move much faster than chimps, and shoot them from a safe distance instead of wrestling. But cars and guns are a recent phenomenon. For more than 2 million years, human neural networks kept growing and growing, but apart from some flint knives and pointed sticks, humans had precious little to show for it. What then drove forward the evolution of the massive human brain during those 2 million years? Frankly, we don't know.

[C] Another singular human trait is that we walk upright on two legs. Standing up, it's easier to scan the savannah (6) game or enemies, and arms that are unnecessary for locomotion are freed for other purposes, like throwing stones or signalling. The more things these hands could do, the more successful their owners were, so evolutionary pressure brought about an increasing concentration of nerves and finely tuned muscles in the palms and fingers. As a result, humans can perform very intricate tasks with their hands. (7) particular, they

can produce and use sophisticated tools. The first evidence for tool production dates (8) about 2.5 million years ago, and the manufacture and use (9) tools are the criteria by which archaeologists recognise ancient humans.

[D] Yet walking upright has its downside. The skeleton of our primate ancestors developed for millions of years to support a creature that walked on all fours and had a relatively small head. Adjusting (10) an upright position was quite a challenge, especially when the *scaffolding had to support an extra-large cranium. Humankind paid for its lofty vision and industrious hands with backaches and stiff necks.

Women paid extra. An upright gait required narrower hips, constricting the birth canal — and this just when babies' heads were getting bigger and bigger. Death in childbirth became a major hazard for human females. Women who gave birth earlier, when the infant's brain and head were still relatively small and supple, *fared better and lived to have more children. Natural selection [11] favoured earlier births. And, indeed, compared to other animals, humans are born prematurely, when many of their vital systems are still under-developed. A colt can trot shortly after birth; a kitten leaves its mother to *forage on its own when it is just a few weeks old. Human babies are helpless, dependent for many years on their elders (12) sustenance, protection and education.

This fact has contributed greatly both (13) humankind's extraordinary social abilities and to its unique social problems. Lone mothers could hardly forage enough food for their offspring and themselves with needy children in tow. Raising children required constant help (14) other family members and neighbours. It takes a [15] to raise a human. Evolution thus favoured those capable of forming strong social ties. [16], since humans are born underdeveloped, they can be educated and socialised to a far greater extent than any other animal. Most mammals emerge from the womb like glazed *earthenware emerging from a *kiln — any attempt at remoulding will only scratch or break them. Humans emerge from the womb like molten glass from a furnace. They can be spun, stretched and shaped with a surprising degree of freedom. This is [17] today we can educate our children to become Christian or Buddhist, capitalist or socialist, warlike or peace-loving.

Notes

feline ネコ科の	enamoured of ㊦ absorbed in	calculus 微積分	atrophied< atrophy 委縮する
scaffolding 骨格, 骨組み	forage 探し回る	fared < fare 暮らす	earthenware 陶器
kiln (陶器などを焼く) 窯	molten < melt		

問1 空所(1)に入れるのに適切なものを下の a. ～ d. の中から選びなさい。

- a. Because of b. Despite c. Owing to d. Besides

問2 下線部(2)の言い換えとして適切なものを下の a. ～ d. の中から選びなさい。

- a. People who have no brain think that that evolution should select for larger brains.
b. Evolution is said to select for people with larger brains.
c. We assume that evolution should select for larger brains.
d. No brainer likes the idea that evolution should select for larger brains.

問3 問1 空所(3)に入れるのに適切なものを下の a. ～ d. の中から選びなさい。

- a. true b. hypothesis c. case d. verification

問4 空所(4)～(10)の中に入るものを下の語群の中から選びなさい。(同じものを何度使ってもよい)

of off for from to with in

問5 空所[11]に入れるのに適切な語(句)を下の a. ～ d. の中から選びなさい。

- a. simultaneously b. nevertheless c. however d. consequently

問6 空所(12)～(14)の中に適切な前置詞を入れなさい。

問7 空所[15]に入れるのに適切な語(句)を下の a. ～ d. の中から選びなさい。

- a. tribe b. a long time c. less time d. nation

問8 空所[16]に入れるのに適切な語(句)を下の a. ～ d. の中から選びなさい。

- a. In addition b. However c. Beside d. In contrast

問9 空所[17]に入れるのに適切な語(句)を下の a. ～ d. の中から選びなさい。

- a. because b. what c. how d. why

問10 下記の英文を入れるのに適切な箇所を空所[A]～[D]の中から選びなさい。

The fact is that a jumbo brain is a jumbo drain on the body.