平成31年度入学試験問題

外 国 語 (英 語)

注 意 事 項

1　この問題冊子は，試験開始の合図があるまで開いてはならない。

2　問題冊子は，全部で10ページある。(落丁，乱丁，印刷不鮮明の箇所などがあった場合は申し出ること。)

3　**解答は，すべて解答用紙の指定された箇所に記入すること。**

4　受験番号は，各解答用紙の指定された2箇所に必ず記入すること。

5　解答時間は，教育学部学校教員養成課程教科教育コース英語教育専修が100分，教育学部(学校教員養成課程教科教育コース英語教育専修を除く)およびその他の学部は90分である。解答すべき問題(○印)および解答用紙の枚数は，下表のとおりである。

受　　験　　者	解答すべき問題(○印)				解答用紙の枚数
	Ⅰ	Ⅱ	Ⅲ	Ⅳ	
人 文 学 部	○	○	○		3
教育学部(学校教員養成課程教科教育コース英語教育専修を除く)	○	○	○		3
教育学部(学校教員養成課程教科教育コース英語教育専修)	○	○	○	○	4
法　　学　　部	○	○	○		3
経 済 学 部	○	○	○		3
理　　学　　部	○	○	○		3
医　　学　　部	○	○	○		3
歯　　学　　部	○	○	○		3
工　　学　　部	○	○	○		3
農　　学　　部	○	○	○		3
創 生 学 部	○	○	○		3

教育学部学校教員養成課程教科教育コース英語教育専修のリスニングテストは，試験開始70分後に約15分間実施する。

6　下書きは，問題冊子の余白を使用すること。

7　問題冊子は，持ち帰ること。

I 〔全学部受験者用〕次の英文を読んで，下の問いに答えなさい。

In 2008, our species crossed a significant Rubicon of habitat: for the first time, a majority of us lived in cities. We could now be called, as at least one anthropologist has suggested, Metro sapiens. And we're not done. Globally, 2 billion more people will move to cities in the next thirty years. By 2030, there will be 590 million urbanites just in India. China is already half urban; so is Liberia, and the percentage of urbanites in Bangladesh and Kenya quadrupled in recent years.

(a) This momentous urban migration could be a good thing. Cities are often the most creative, wealthiest and most energy-efficient places to live. City dwellers typically experience better sanitation, nutrition, gender equality and access to health care than their rural counterparts. The world's growing megacities, though, are not generally the centers of enlightenment that we might hope. In Kinshasa, a city of more than 11 million in the Democratic Republic of the Congo, per capita yearly income is $250. Harvard economist Ed Glaeser has asked how a megacity with such a poor population can "be anything but a hell on earth?" Making cities like Kinshasa livable, he argues, is "the great challenge of our century."

(b) Cities will have to figure out how to cram more people into smaller areas without everyone going literally crazy. Back in 1965, animal behaviorist Paul Leyhausen described what happened to cats in unnaturally crowded environments: they become more aggressive and despotic, turning into a "spiteful mob." In similar conditions, Norway rats forget how to build nests and start eating their own. In confined primates, hormonal systems go wrong and reproduction can drop. So what about us? Extensive reviews of the medical literature show a 21 percent increase in anxiety disorders, a 39 percent increase in mood disorders and a doubled risk of schizophrenia in city dwellers. Urban living is associated with increased activity in the brain's amygdala — the

fear center — and in the perigenual anterior cingulate cortex, a key region for regulating fear and stress.

Now that I'd learned about the ways in which being in nature changes our brains for the better, it was time to figure out how to bring the lessons back to where most of us live, in cities. Here are some of the essential take-home ideas: we all need nearby nature; (c) we benefit mentally and psychologically from having trees, bodies of water, and green spaces just to look at; we should be smarter about landscaping our schools, hospitals, workplaces and neighborhoods so everyone gains. We need quick visits to natural areas that engage our senses. Everyone needs access to clean, quiet and safe natural refuges in a city. (d) Short exposures to nature can make us less aggressive, more creative, more civic-minded and healthier overall.

(Adapted from Florence Williams, *The Nature Fix*, Norton, 2017)

〔注〕 quadruple 4倍になる　　despotic 独裁的な
spiteful 悪意に満ちた　　primate 霊長類の動物
schizophrenia 統合失調症

問 1. 下線部(a)のように筆者が考える理由を，本文に即して，句読点を含めて100字以内の日本語で述べなさい。

問 2. 下線部(b)を和訳しなさい。

問 3. 下線部(c)を和訳しなさい。

問 4. 下線部(d)を和訳しなさい。

II 〔全学部受験者用〕次の英文を読んで，下の問いに答えなさい。

Worms and fish do it. Birds and bees do it. But do jellyfish fall asleep?

It seems like a simple question, but answering it required a multistep investigation by a trio of Caltech graduate students. Their answer, published Thursday in *Current Biology*, is that at least one group of jellyfish called Cassiopea, or the upside-down jellyfish, does snooze.

The finding is the first documented example of sleep in an animal with a diffuse nerve net, a system of neurons that are spread throughout an organism and not organized around a brain. It challenges the common notion that sleep requires a brain. It also suggests sleep could be an ancient behavior because the group that includes jellyfish branched off from the last common ancestor of most living animals early on in evolution.

Working together was natural for Claire Bedbrook, Michael Abrams and Ravi Nath. The three leading co-authors of the paper are all doctoral candidates in biology at Caltech and close friends.

The project started with an observation by Mr. Abrams that some upside-down jellyfish in the lab would immediately slow their pulsing when the lights were turned off. Over coffee one evening, he discussed this phenomenon (a) with Mr. Nath, who had been studying sleep in roundworms and pondering whether other "simple" animals slept. The two decided to visit Mr. Abrams's lab in the middle of the night, to see how the jellyfish were behaving.

On their way over, they ran into Ms. Bedbrook and excitedly relayed their plan. "There's no way these jellyfish sleep," she said, before joining them.

In the darkened lab, they observed a tankful of jellyfish pulsing infrequently and staying still for long periods of time — jellyfish that looked, in other words, like they were sleeping. Ms. Bedbrook started to believe they had discovered something.

To prove that jellyfish sleep, the students had to demonstrate that they

fulfill three behavioral criteria. (b) First, the animals must undergo a period of diminished activity, but they must also be able to be aroused from this state, to distinguish sleep from other states, like comas. Over six days and nights, the researchers monitored 23 jellyfish, which pulsed about 30 percent less at night than during the day. If fed or poked in the middle of the night, the jellyfish would temporarily stir.

Next, the animals must exhibit decreased responsiveness to stimuli while sleeping. Upside-down jellyfish get their name from the fact that they sit upside-down on the seafloor — they don't like to be suspended in water. To test their responsiveness, the scientists placed the jellyfish in little containers with removable bottoms that were elevated within the tank. When the researchers pulled the container bottoms out during the day, the creatures would immediately swim to the bottom of the tank. At night, however, they would sluggishly float around at first.

Last, the animals must show an increased need for sleep if they are kept from it, so the biologists shook the water in the jellyfish's tank every 20 minutes at night to prevent the creatures from sleeping continuously. The following day and night, the jellyfish exhibited much lower levels of activity than normal, suggesting sleep deprivation.

(c) Sleep is often associated with having a brain because the behavior seems to be required for memory and learning, and because shared genes and mechanisms for sleep have been identified in all sorts of animals with brains, from worms and flies to mice and humans. But what we've found, at least in this jellyfish, is "you don't need a brain to sleep," Mr. Abrams said.

(Adapted from Steph Yin, "How Three Friends Proved That Jellyfish Can Sleep," *The New York Times*, September 21, 2017)

〔注〕 Caltech＝the California Institute of Technology
upside-down jellyfish　サカサクラゲ　　diffuse nerve net　散在神経網
pulse　(クラゲが)傘の開閉運動をする　　roundworm　回虫
coma　昏睡状態

問 1. 下線部(a)の内容を，句読点を含めて 50 字以内の日本語で述べなさい。

問 2. 下線部(b)について，筆者が 2 番目に挙げている基準を，句読点を含めて 30 字以内の日本語で述べなさい。

問 3. 下線部(b)について，筆者が 3 番目に挙げている基準を満たしているかどうか確認するために，Abrams 氏らが行った実験とその結果を，句読点を含めて 70 字以内の日本語で述べなさい。

問 4. 下線部(c)を和訳しなさい。

Ⅲ は次ページ

◇M6(896—118)

Ⅲ 〔全学部受験者用〕次の問題Ａ，Ｂに答えなさい。

問題Ａ．下線部(a)，(b)を英訳しなさい。

(a)自転車に乗りはじめのとき，こわいから，速くは走ることができない。おそるおそるゆっくり走る。するとすぐ倒れる。よけいこわくて速く走れない。

自転車は速く走れば走るほど倒れにくい。ゆっくり走れば走るほど，安定しにくく倒れやすい。はじめはそのことがわからず，苦労する。

読む場合も似たことがおこる。不自然にゆっくり読むからわかりにくい。思い切って速く読むと，かえってよくわかるのである。

同様のことが書くのにも言える。書くのはたいへんだ，あまり上手でない，そう思っている人は，時間をかけてゆっくり，ていねいに書こうとする。(b)時間をかければかけるほど，いいものが書けるように考えがちである。これがかえってあだになる。

〔出典〕外山滋比古『知的文章術』(大和書房，2017 年)

問題Ｂ．次の質問に 80 語(80 words)程度の英文で答えなさい。解答欄末尾の所定の箇所に，解答に用いた語の数を「(75 words)」のように必ず記すこと。ただし，ピリオドやコンマなどの句読点は語数に含めません。

Modern day computers are now able to translate quickly and more and more accurately, so some people think that learning foreign languages is a waste of time. Do you agree or disagree? And why?