

2019年度

Y 英語問題

注意

1. 試験開始の指示があるまでこの問題冊子を開いてはいけません。
2. 解答用紙はすべてHBの黒鉛筆またはHBの黒のシャープペンシルで記入することになっています。HBの黒鉛筆・消しゴムを忘れた人は監督に申し出てください。(万年筆・ボールペン・サインペンなどを使用してはいけません。)
3. この問題冊子は20ページまでとなっています。試験開始後、ただちにページ数を確認してください。なお、問題番号はI～Vとなっています。
4. 解答用紙にはすでに受験番号が記入されていますので、出席票の受験番号が、あなたの受験票の番号であるかどうかを確認し、出席票の氏名欄に氏名のみを記入してください。なお、出席票は切り離さないでください。
5. 解答は解答用紙の指定された解答欄に記入し、その他の部分には何も書いてはいけません。
6. 解答用紙を折り曲げたり、破ったり、傷つけたりしないように注意してください。
7. この問題冊子は持ち帰ってください。

マーク・センス法についての注意

マーク・センス法とは、鉛筆でマークした部分を機械が直接よみとって採点する方法です。

1. マークは、下記の記入例のようにHBの黒鉛筆で枠の中をぬり残さず濃くぬりつぶしてください。
2. 1つのマーク欄には1つしかマークしてはいけません。
3. 訂正する場合は消しゴムでよく消し、消しきらずはきれいに取り除いてください。

マーク記入例：

A	1	2	3	4	5
	○	○	●	○	○

 (3と解答する場合)

I . 次の文を読み、下記の1～10それぞれに続くものとして、本文の内容ともっともよく合致するものを、各イ～ニから1つずつ選び、その記号を解答用紙の所定欄にマークせよ。

The Bajau people of Southeast Asia are among the most accomplished divers in the world. In the summer of 2015, Melissa Ilardo got to see how good they are firsthand. She remembers diving with Pai Bayubu, who had already gone fairly deep when he saw a giant clam, 30 to 50 feet below him. “He just *dropped* down,” Ilardo recalls. “He pointed at it, and then he was there. Underwater, the Bajau are as comfortable as most people are on land. They walk on the seafloor. They have complete control of their breath and body. They spear fish, no problem, first try.”

Sometimes known as “sea nomads,” the Bajau have lived at sea for more than 1,000 years, on small houseboats that float in the waters off Indonesia, Malaysia, and the Philippines. Traditionally, they came ashore only to trade for supplies or to shelter from storms. They collect their food by free diving to depths of more than 230 feet. They have no underwater diving equipment, and use only wooden goggles and spearguns of their own making. Sometimes, they break their own eardrums at an early age to make diving easier.

Not all of them dive; some avoid it entirely. But those who do take the skill to an extreme. Each day, they’ll spend more than five hours underwater, capturing between two and 18 pounds of fish and octopuses. The average dive lasts for just half a minute, but the Bajau can hold their breath for far longer. In the BBC documentary *Human Planet*, a man named Sulbin stays underwater for almost three minutes. “I focus my mind on breathing,” he told the BBC. “I only dive once I’m totally relaxed.”

Their abilities are almost certainly shaped by experience and training. But Ilardo has found evidence that they are also genetically adapted to life in the sea.

Over three trips in the summer of 2015, she got to know people from the Bajau village of Jaya Bakti in Indonesia. She explained her work as a geneticist, went diving with them, and learned about their lifestyles. On one trip, she brought along an ultrasound machine and scanned the bodies of 59 villagers. That’s when she realized that the Bajau have unusually large *spleens—50 percent bigger than

those of the Saluan, a neighboring group who barely interact with the sea.

The spleen acts as a warehouse for oxygen-carrying red blood cells. When mammals hold their breath, the spleen contracts, expelling those cells and boosting oxygen levels by up to 10 percent. For that reason, the best competition free divers tend to have the largest spleens, as do the deepest-diving seals. It's even possible to train your spleen: Erika Schagatay, from Mid Sweden University, found that after climbing Mount Everest, mountaineers empty more of their spleens while holding their breath longer than they could before.

But Bajau spleens aren't big just because of training. Ilardo and her team, led by Eske Willerslev and Rasmus Nielsen at the University of Copenhagen, found that even Bajau villagers who never dive still have disproportionately large spleens. "When we saw that, we thought, okay, something's going on and it's likely genetic," Ilardo says. Using blood samples collected from the same 59 Bajau villagers, she and her team compared their DNA to that of 34 Saluan individuals and 60 Han Chinese. They looked for genes with variants that are more common in the Bajau than in the other populations—a sign of natural selection at work. And they found several candidates.

One gene, known as PDE10A, stood out. It does many things, but it's especially active in the ^{**}thyroid gland, and controls the release of hormones. The version of PDE10A that's common in the Bajau is associated with higher levels of thyroid hormones, and those hormones in turn make spleens grow bigger—at least, in rats and mice. This might explain why the Bajau have such large spleens, and thus, such extraordinary breath-holding skills. "This shows, for the first time, that there may be a genetic background to the spleen response in humans," says Schagatay, who was not involved in the study.

PDE10A is only part of the story. Ilardo's team also found signs of adaptation in other genes, which they now plan to study further. One of these, BDKRB2, is the only gene that's been previously linked to diving in humans. It affects the narrowing of blood vessels in the extremities, and so controls how much oxygen reaches the core organs like the brain, heart, and lungs.

Another candidate, FAM178B, influences the levels of carbon dioxide in the blood—which is also an important factor to control when holding one's breath. The

version of FAM178B that's common in the Bajau seems to have come from the Denisovans, a group of ancient people who lived in Asia. It's clear that when modern humans entered Asia, they mixed with Denisovans and inherited some of their DNA. One Denisovan gene provides modern Tibetans with a crucial adaptation that allows them to survive at high altitudes. It's possible that another gives the Bajau an advantage underwater. "But we haven't confirmed that yet," says Ilardo. "We need to do more analyses."

These discoveries might have important medical implications. Several disorders, including strokes and heart attacks, starve the body of oxygen, so the genetic tricks that help the Bajau thrive underwater might inspire new ways of protecting patients on dry land. For the same reasons, Nielsen and his colleagues are studying the genes of people in Tibet and Ethiopia who live at high altitudes, and other people who live in extreme environments.

But it's also important for geneticists to give back to the communities they study. Ilardo is fully committed to this; she's already planning a return trip to Jaya Bakti to tell Bayubu and the other Bajau about her results. "I think it's wrong to take the samples and disappear forever," she says. "I hope they get something out of it. And I want to spread a positive message about this population."

Ilardo says that the Bajau, like many nomadic groups around the world, face a lot of stigma from surrounding populations. One official from an Indonesian university warned her that they weren't trustworthy. Another told her to stay away from their "love tonic." "There's a lot of mysticism around them," she says. "They live physically on the fringe of society, which causes them to be seen with suspicion. But they were just the most welcoming people I've ever met. Kepala Desa Hasan, the chief of the village, took me into his home. I have a Bajau mom and dad who adopted me."

Their traditional lifestyles are also disappearing. Several government programs have forced many of these nomads to come ashore, and their floating homes have become harder to maintain. "They used to make their houseboats from trees with light wood, but that tree is now endangered for reasons that have nothing to do with them," says Ilardo. "They have to use trees with heavier wood, which means motors, which means gas, which is expensive. They're slowly becoming

connected to the land, but some of them still build houses on posts to maintain a connection to the sea.”

*spleen : 脾臟

**thyroid gland : 甲状腺

1. Among the Bajau people of Southeast Asia, diving is
 - イ. a means of survival.
 - ロ. a forgotten art.
 - ハ. a form of recreation.
 - ニ. a symbolic ritual.

2. The passage suggests that the main reason Melissa Ilardo wanted to study the Bajau people was to
 - イ. help them adjust to the demands of the modern world.
 - ロ. understand how diving is related to their cultural beliefs.
 - ハ. see if there is a genetic basis to their diving skills.
 - ニ. improve her own free diving technique.

3. The author gives the example of mountaineers (paragraph 6) to make the point that
 - イ. mountain climbing is more physically demanding than diving.
 - ロ. it's important to have a big spleen to climb Mount Everest.
 - ハ. mountain climbing is a good way to train for free diving.
 - ニ. the spleen adjusts to the physical demands we place on it.

4. The underlined word “disproportionately” (paragraph 7) is closest in meaning to
 - イ. attractively.
 - ロ. excessively.
 - ハ. questionably.
 - ニ. unfortunately.

5. In their comparative analysis of the DNA of Bajau, Saluan, and Han Chinese people, Ilardo and her team found three genes that
- ㄱ. are basically the same in all three groups.
 - ㄴ. could not have been influenced by genetic adaptation.
 - ㄷ. are related to blood chemistry but not internal organs.
 - ㄹ. have variants in the Bajau that are helpful for diving.
6. Ilardo will visit the Bajau people again in order to
- ㄱ. share with them what she discovered through her research.
 - ㄴ. investigate the mystical traditions of Bajau culture.
 - ㄷ. compare their genes with those of Tibetans and Ethiopians.
 - ㄹ. help them deal with threats to their traditional way of life.
7. The underlined word “stigma” (paragraph 13) is closest in meaning to
- ㄱ. curiosity.
 - ㄴ. disapproval.
 - ㄷ. responsibility.
 - ㄹ. silence.
8. One point of the last paragraph is that
- ㄱ. the government is trying to protect traditional Bajau culture.
 - ㄴ. the Bajau people have been criticized for their use of natural resources.
 - ㄷ. it has become more difficult for the Bajau people to live on houseboats.
 - ㄹ. the Bajau people until now have resisted any change to their lifestyle.
9. The author would most likely agree that
- ㄱ. the Bajau people learned their diving skills from the Denisovans.
 - ㄴ. over a long period of time customary behavior can influence genetics.
 - ㄷ. the Bajau people are similar to the image nearby groups have of them.
 - ㄹ. there are no obvious medical benefits from Ilardo’s research.

10. The most appropriate title for this passage is

- イ. Did the Bajau People Evolve for a Life at Sea?
- ロ. The Role of Free Diving in Southeast Asian Cultures.
- ハ. Will the Bajau People Be Able to Preserve Their Culture?
- ニ. The Biological Basis of Extreme Sports Activity.

II. 次の文を読み、下記の1～10それぞれに続くものとして、本文の内容ともっともよく合致するものを、各イ～ニから1つずつ選び、その記号を解答用紙の所定欄にマークせよ。

Standing alone in a small enclosure, a 21-year-old Asian bull elephant named Billy seems unaware of the two dozen schoolchildren who press against a chain-link fence to get a closer look. He moves his massive head up and down and transfers his considerable weight from one side to the other. His trunk extends toward the blue plastic cylinder that has been provided for him to play with. Occasionally Billy walks over to another part of the yard—his massive gray body, wrinkled skin and huge, fanlike ears, intimidating yet at the same time irresistible. Some of the kids have never been this close to a real, live elephant, and their gasps and laughter convey the consensus: he's cool!

But to animal-rights activists, animal-behavior experts and even some zoo officials, Billy's situation is very uncool. In the wild, elephants wander as much as 30 miles a day, snacking on green leaves, bathing in water holes and interacting socially with other elephants in groups of up to 20. At the Los Angeles Zoo, Billy has had just under an acre on which to roam. After a \$39 million upgrade scheduled for completion in the next five years, he will share 3.7 acres (about three football fields) with two companions.

That's generous by today's standards, but critics say it's still too little to give an elephant adequate exercise. Living in such confinement, elephants suffer from arthritis, foot problems, and even premature death. Billy's head nodding, they contend, is typical of elephants in distress and probably results from an inadequate physical environment. "I've come to the conclusion after many years that it is simply not possible for zoos to meet the needs of elephants," asserts David Hancocks, an outspoken zoo consultant and former director of the Woodland Park Zoo in Seattle.

He's not alone. Over the past five years, major zoos across the country—San Francisco, Chicago, Detroit, Philadelphia, the Bronx Zoo in New York City—have quietly made the decision to stop exhibiting elephants altogether, some as soon as they can find homes for the animals and others after the deaths of the ones they have. For zookeepers, it's a continuation of a reform movement that began a generation ago and swept through most major U.S. zoos. The old concrete-and-steel

cages that resembled prisons for animals are mostly gone. The barriers between people and animals today consist largely of ditches and low walls that give the exhibits the feel of miniature wild habitats.

But the reform movement, say critics, didn't go far enough, and those natural-looking habitats are just an illusion created to enhance the visitors' experience. "From the animals' point of view," says Hancocks, "they are not better off than they were when they were in cages. It's all done for theatrics."

Hancocks goes further than most zoo professionals would, but there is growing agreement that zoos are on the verge of yet another wave of transformation. This time the question is whether some animals—not just elephants but also giraffes, bears and others—belong in zoos at all. "On the one hand," says Ron Kagan, executive director of the Detroit Zoological Society, "people want to see the well-known animals like elephants, gorillas, and giraffes. But we believe that the American public wants us to create facilities for these animals only if we can provide them with a good life." It was that calculus that last year led Kagan to eliminate an elephant exhibit on humane grounds.

One key consideration was Detroit's harsh winters. Although elephants can tolerate cold weather, standing on snow and ice increases the risk of slipping and falling. The only alternative was to have the animals spend most of the winter months indoors, where hard concrete led to foot problems and boredom. Many zoos, like the one in San Diego, have phased out certain species, like the moose, that do better in other climates. "Bringing cold-weather animals into the warm Southern California climate is a bad business decision and a waste of precious resources," says Larry Killmar, the zoo's deputy director of collections.

That's part of a national trend. Zoo directors routinely phase out species that don't grow well in the local environment. The ultimate example: the Arizona-Sonora Desert Museum, outside Tucson, which houses 300 animal species and 1,200 kinds of plants on 21 acres of desert. Unlike conventional zoos, the museum doesn't even try to take on species that are not native to the area because its mission is not to give visitors a snapshot of wildlife everywhere but to give the full story of a single ecology. "It has a completely different mind-set than most zoos," says Hancocks.

The largest zoos can't really afford to adopt that approach. The San Diego

Zoo, for example, draws some 3 million visitors a year and like many big city zoos is a major contributor to the local economy. Zoo officials consider it part of their mission to inspire visitors to care about wildlife and the habitats that nurture it. “We’re trying to engage people emotionally,” says Andy Baker, senior vice president for animal programs at the Philadelphia Zoo, the nation’s oldest. “It’s much less about natural history and life cycle these days and more about sympathy.”

That being the case, Philadelphia, like most major zoos, is not about to transform itself into a place that shows only native *fauna—for example, black bears, raccoons, wild turkeys, and chipmunks. Indeed, the institution has just opened up Big Cat Falls, a flashy exhibition showcasing lions, pumas, jaguars, leopards, and tigers. Although the exhibit has drawn fire from animal activists, many experts believe that those animals can do fine in captivity, since even in the wild they spend much of their time sitting around digesting their last meal. Hancocks, for one, thinks gorillas and other primates can reasonably be kept in zoos. “If you can give them an intellectual environment,” he says, “so they are using their minds and manipulating their fingers, they can be satisfied.”

Bears, however, are a different story. Many experts believe they don’t belong in zoos at all. They’re too curious and exploratory to be satisfied by an artificial environment. But it’s not clear what you do with a bear that’s already in captivity. Animal-rights activists have long complained about the highly ritualized, seemingly neurotic behavior of Gus, the polar bear in New York City’s Central Park Zoo. “Though Gus is perfectly healthy, people tell us to send him back,” says Alison Powers, communications director of the Wildlife Conservation Society, Central Park’s parent institution. “But Gus wasn’t brought here from the Arctic. He came from Ohio. He wouldn’t stand a chance in the wild.”

Many animal-behavior experts also oppose zoo confinement for giraffes, gazelles, and other animals designed by evolution to run freely across miles of savannah. “What you see in zoos is just completely unnatural,” says Marc Bekoff, an animal behaviorist at the University of Colorado. But most of all, Bekoff and his colleagues oppose the restrictions imposed on elephants. “The only place I have seen truly happy elephants in captivity,” says Hancocks, “is in the two elephant sanctuaries in Tennessee and California. Once you’ve seen how wonderful their

lives are there, you realize whatever zoos do is doomed to be inadequate.”

Hancocks’s solution? A few national zoos in appropriate climates that tourists from all over the country can visit. “There are two Disney parks,” he says. “That’s enough for America’s children. Similarly, two really good spots for elephants in the country would be sufficient.”

*fauna : ある地域の動物相

1. The author gives the example of Billy, an Asian bull elephant, to show that
 - イ. elephants do not like to be observed by human beings.
 - ロ. zoos may not be able to provide for the needs of elephants.
 - ハ. elephants are more prone to injury than are other animals.
 - ニ. the Los Angeles Zoo has created an ideal elephant exhibit.

2. The zoo reform movement has influenced zoos to do all the following EXCEPT
 - イ. install more natural habitats for zoo animals.
 - ロ. phase out their elephant exhibits.
 - ハ. remove steel cages with concrete floors.
 - ニ. eliminate the barriers between people and animals.

3. Critics of the zoo reform movement have raised the question of whether
 - イ. human beings have a right to keep animals in captivity.
 - ロ. the American public has ever thought about how zoo animals feel.
 - ハ. a variety of animals, not just elephants, should be kept in zoos.
 - ニ. all zoos in the U.S. should be eliminated.

4. The underlined word “theatrics” (paragraph 5) is closest in meaning to
 - イ. appearance.
 - ロ. emotion.
 - ハ. necessity.
 - ニ. performance.

5. The underlined word “calculus” (paragraph 6) is closest in meaning to
- イ. curiosity.
 - ロ. reasoning.
 - ハ. strategy.
 - ニ. sympathy.
6. The passage suggests that a visitor to the Arizona-Sonora Desert Museum would be likely to see all of the following EXCEPT
- イ. a cactus.
 - ロ. a lizard.
 - ハ. a moose.
 - ニ. a scorpion.
7. The passage suggests that the primary goal of the larger zoos in the U.S. is to
- イ. show visitors the diversity of a single wildlife ecology.
 - ロ. offer visitors an escape from the stress of city life.
 - ハ. encourage visitors to care about animals and their habitats.
 - ニ. educate visitors about the challenges of keeping animals in zoos.
8. The Philadelphia Zoo
- イ. is one of the newest zoos in the U.S.
 - ロ. shows only local animals such as bears and raccoons.
 - ハ. is different in its outlook from zoos in other major U.S. cities.
 - ニ. was recently criticized by animal activists.
9. David Hancocks refers to the example of Disney parks to argue that
- イ. a small number of elephant sanctuaries is enough.
 - ロ. zoos do not need real animals to be successful.
 - ハ. amusement parks should have more animal exhibits.
 - ニ. American children don't need zoos to appreciate wildlife.

10. The most appropriate title for this passage is

- イ. Do Elephants Have Rights?
- ロ. Wildlife in its Natural Habitat.
- ハ. Who Belongs in a Zoo?
- ニ. The Destiny of Zoos in the U.S.

Ⅲ. 次の1～8それぞれの空所を補うのもっとも適当なものを、各イ～ニから1つずつ選び、その記号を解答用紙の所定欄にマークせよ。

1. If Richard () absent tomorrow, we will need to seek assistance from someone else.

イ. is

ロ. were

ハ. will have been

ニ. would be

2. The reason he gave was () a false alibi to confuse the police.

イ. no less than

ロ. not less than

ハ. no more than

ニ. not more than

3. My younger brother witnessed the robbery that () place on the west side.

イ. having taken

ロ. taken

ハ. taking

ニ. took

4. None of the students wanted () teacher to retire, but there was no choice.

イ. all

ロ. both

ハ. either

ニ. neither

5. Expecting the manager to do all the work for our company is asking too much () her.

イ. for

ロ. of

ハ. on

ニ. to

6. She remembers her father () home a stray cat one Christmas evening.

イ. bringing

ロ. brings

ハ. to bring

ニ. to have brought

7. He () followed her kind advice when he was deciding his future, but he didn't.

イ. could had

ロ. could have

ハ. will have

ニ. would had

8. What do you think made him () in such a peculiar way?

イ. act

ロ. acted

ハ. acting

ニ. to act

IV. 次の空所(1)～(6)を補うのにもっとも適当なものを、それぞれ対応する各イ～ニから1つずつ選び、その記号を解答用紙の所定欄にマークせよ。

A.

Librarian: How may I help you?

Reader: I would like to return these books.

Librarian: OK, (1).

Reader: Here they are.

Librarian: It appears that these books are three weeks late.

Reader: Yeah, I forgot they were due.

Librarian: We will have to charge you late fees on these books.

Reader: How much?

Librarian: Let's see. Fifty cents per day.

Reader: (2)?

Librarian: No. For each book.

Reader: That's a lot of money.

Librarian: Yes, it is. From now, remember to return your books on time!

- (1) イ. let me see about it
ロ. give me a second
ハ. I'll take them for you
ニ. please bring them later

- (2) イ. For every book
ロ. For all the books
ハ. Did you send me a reminder
ニ. Are you serious

B.

Passenger: My flight was delayed so I missed my connection. What should I do?

Airline staff: Don't worry. The airline computer is keeping track of your flight details.

Passenger: (3)?

Airline staff: No. We will try to direct you to another flight.

Passenger: What if there are no more connecting flights?

Airline staff: We will see if there is something available with this airline. If necessary, we can check for a flight with another carrier.

Passenger: (4), will I have to spend the night here?

Airline staff: Unfortunately, yes. But since the flight delay was our fault, we will cover the cost of your hotel.

- (3) ㄱ. Do I have to do anything
 ㄷ. Is there any way to solve the problem
 ㄹ. Can you rebook my flight
 ㄴ. Has my baggage been forwarded
- (4) ㄱ. If the flight leaves immediately
 ㄷ. If the flight is with another carrier
 ㄹ. If I can't collect my bags
 ㄴ. If nothing is available

C.

Client: I need somebody to come over and fix my Internet connection.

Support center staff: What's the problem?

Client: For some reason, (5).

Support center staff: How long has this been happening?

Client: For the past few days.

Support center staff: Well, the server isn't down, so there must be something wrong with your computer.

Client: Could you send someone over to fix it today?

Support center staff: Yes, we'll send Michael right away.

Client: (6)?

Support center staff: In about half an hour.

Client: Great. I'll wait for him here.

- (5) ㄱ. it's just not connecting
 □. it doesn't go up
 ㄴ. it's my computer program
 ㄷ. I don't have the slightest idea
- (6) ㄱ. How long will it take him to fix it
 □. What is his schedule like today
 ㄴ. When can I expect him
 ㄷ. When did you send him

V. 次の空所(1)~(6)を補うのにもっとも適当なものを、それぞれ対応するイ~ニから1つずつ選び、その記号を解答用紙の所定欄にマークせよ。

Much of the excitement among investigators in the field of intelligence derives from their attempts to determine exactly what intelligence is. Different investigators have emphasized different aspects of intelligence in their definitions. For example, in a 1921 symposium the American psychologists Lewis M. Terman and Edward L. Thorndike (1) over the definition of intelligence, Terman stressing the ability to think abstractly and Thorndike emphasizing learning and the ability to give good responses to questions. More recently, however, psychologists have generally agreed that adaptation to the environment is the key to (2) both what intelligence is and what it does. Such adaptation may occur in a variety of settings: a student in school learns the material he needs to know in order to do well in a course; a physician treating a patient with unfamiliar symptoms learns about the underlying disease; or an artist reworks a painting to convey a more coherent impression. For the (3) part, adaptation involves making a change (4) oneself in order to cope more effectively with the environment, but it can also mean changing the environment or finding an entirely new one. Effective adaptation draws upon a number of cognitive processes, such as perception, learning, memory, reasoning, and problem solving. (5), the physician who learns about a new disease adapts by reviewing the medical literature, learning what the material contains, remembering the crucial aspects that are needed to treat the patient, and then utilizing reason to solve the problem of (6) the information to the needs of the patient. Intelligence, in total, has come to be regarded not as a single ability but as an effective way of drawing together many abilities.

- | | | | | |
|-----|---------------|-----------------|--------------|------------------|
| (1) | イ. differed | ロ. hesitated | ハ. suspended | ニ. sympathized |
| (2) | イ. concerning | ロ. eliminating | ハ. obtaining | ニ. understanding |
| (3) | イ. main | ロ. most | ハ. ordinary | ニ. primary |
| (4) | イ. at | ロ. from | ハ. in | ニ. on |
| (5) | イ. However | ロ. Nevertheless | ハ. Next | ニ. Thus |
| (6) | イ. adding | ロ. applying | ハ. leaking | ニ. providing |

【以下余白】

