

A 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。

It's easy enough to study the brain and behavior of an animal, but more subtle cognitive abilities are harder to map. One of the most important skills human children must learn is something called the "theory of mind": the idea that each individual has their own inner world of thoughts and emotions and that the inner world of others is different. A two-year-old who watches a babysitter hide a toy in a room will assume that anyone who walks in afterward knows where the toy is, too. It's not until about age three that kids realize that just because they know something, it doesn't mean somebody else knows it also.

The theory of mind is central to communication and self-awareness, and it's the rare animal that exhibits it, though some do. Dogs understand naturally what pointing means: that someone has information to share and that your attention is being drawn to it so that you can learn, too. That seems simple, but only because we're born with the ability and have fingers with which to do the pointing.

Great apes, despite their impressive intellect and five-fingered hands, do not seem to be born with the ability to point. But they may just lack the opportunity to practice it. A baby ape rarely lets go of its mother, clinging to her stomach as they go from place to place. But Kanzi, a bonobo ape who was used for research and was raised in captivity, was often carried in human arms, and that left his hands free for communication.

By the time Kanzi was nine months old, he was already pointing at things. I witnessed him do it in Iowa, not only when he pointed at me to invite me for coffee but also when he swept his hand toward the hallway in an impatient gesture as I went to get him his ball.

Pointing isn't the only indicator of a smart species that grasps the theory of mind. Blue jays, which are known to be smart birds, hide food for later retrieval and are very mindful of whether other animals are around to witness where they've hidden some food. If the jays have indeed been watched, they will wait until the other animal leaves and then move the food. They not only understand that another creature has a mind; they also manipulate what's inside it.

The gold standard for demonstrating an understanding of the self-other distinction is the mirror test: whether an animal can see its reflection and recognize what it is. It may be cute when a kitten gets a look at itself in a full-length mirror and runs around behind the mirror looking for what it thought was a playmate, but it does not show the cat to be very smart. Elephants, apes, and dolphins are among the few creatures that can pass the mirror test. All three respond appropriately when they look in a mirror after a spot of paint has been applied to their foreheads or other parts of their bodies. Apes and elephants will reach up to touch the marks with fingers or trunks rather than reach out to touch the reflections. Dolphins will position themselves so they can see the reflections of the marks better.

“If you put a bracelet on an orangutan and put it in front of a mirror, it doesn’t just look at the bracelet,” says Bhagavan Antle, director of the Institute of Greatly Endangered and Rare Species in Myrtle Beach, South Carolina. “It puts the bracelet up to its face and shakes it. It interacts with its reflection.”

With or without mirror smarts, some animals are also good at understanding abstractions, particularly the ideas of sameness and difference. Small children know that a picture of two apples is more similar to a picture of two bananas than it is to a picture of an apple and a banana, because in the first two cases the objects match and in the third they don’t.

“It’s called relations between relations, and it’s a basic scaffold of intelligence,” says psychologist Ed Wasserman of the University of Iowa. In 2009, Wasserman conducted a study that showed that baboons and, surprisingly, pigeons got the relations-between-relations idea, correctly identifying the proper pairings with a touch of a beak or a movement of a lever when images were flashed on a screen.

Significantly, just as humans better understand an idea when they have a term to describe it (imagine explaining the differences between, say, “peace” and “harmony” if the words that have come to capture those distinctions didn’t exist), so do animals benefit from labeling. The late psychologist David Premack of the University of Pennsylvania found that when chimps were taught symbols for “same” and “different,” they later performed better on *analogy tests. That’s the reason the bonobos’ communication cards at the Iowa Trust research laboratory increasingly include abstractions like “for,” “to,” “some,” and “until”—all ideas that cannot be

pointed at. And those pay off.

When one of the female bonobos made a pet out of a snake that occasionally wandered into the enclosure, Nyota, a male skilled at language, used some symbol cards they had prepared for communication to instruct his supervisor, “You be quiet for snake to come.” It’s possible Nyota would have understood that cause-and-effect relationship no matter what, but being able to express it could not have helped but increase his understanding.

If animals can reason, even if it’s in a way we’d consider crude, the unavoidable question becomes: Can they feel? Do they experience sympathy or compassion? Can they love or care or hope or grieve? And what does that say about how we treat them? For science, it would be safest simply to walk away from a question so full of imponderables. But science can’t help itself, and some investigators are exploring these ideas, too.

It’s well established that elephants appear to mourn their dead, staying near to a herd-mate’s body with what looks like sorrow. They show similar interest—even what appears to be respect—when they encounter elephant bones, gently examining them, paying special attention to the skull and ^{**} tusks. Apes also remain close to a dead troop-mate for days. In 2006, a surprising scene of animals mourning took place at the Great Ape Trust research laboratory when a male bonobo died of cancer. He was laid out on a table in the lobby, and the other animals were given time to look at him from the other side of their glass partition. None of the scientists would venture a guess as to what the bonobos were feeling, but the quiet and thoughtful way they behaved appeared to be consistent with the actions of mourning humans.

Sympathy for living members of the same species is not unheard of, either. A 2008 study by Frans de Waal and others at the Yerkes National Primate Research Center in Atlanta showed that when capuchin monkeys were offered a choice between two tokens—one that would buy two slices of apple and one that would buy one slice each for them and a partner monkey—they chose the generous option, provided the partner was a relative or at least familiar to them. The Yerkes team believes that the capuchins’ behavior was partly out of a simple sense of pleasure they experience in giving, an idea consistent with studies of the human brain that

reveal activity in the reward centers after subjects donate to charity.

Animal-rights supporter Peter Singer believes that such evidence of noble impulses among animals is a perfectly fine argument in defense of their right to live dignified lives, but it's not a necessary one. Indeed, one of his central premises is that to the extent that humans and animals can experience their worlds, they are equals. "Similar amounts of pain are equally bad," he says, "whether felt by a human or a mouse."

*analogy test : 類推テスト

**tusks : 牙

1. The "theory of mind" as explained in paragraph one refers to the ability to understand that
 - イ. minds are complicated and can be understood in many ways.
 - ロ. we learn about the world by observing and experiencing it.
 - ハ. one's own thoughts are different from others' thoughts.
 - ニ. knowledge about the world can be shared through communication.

2. The passage suggests that Kanzi
 - イ. developed a theory of mind only because he was raised in captivity.
 - ロ. uses his hands for communication more than bonobos raised in the wild.
 - ハ. is a species that is not representative of other great apes.
 - ニ. does not really understand the gesture of pointing when he uses it.

3. All the following have passed the mirror test EXCEPT
 - イ. cats.
 - ロ. dolphins.
 - ハ. elephants.
 - ニ. orangutans.

4. The underlined word “scaffold” (paragraph 9) is closest in meaning to
- イ. impression.
 - ロ. judgement.
 - ハ. proposal.
 - ニ. structure.
5. The author includes the example of Nyota, a male bonobo who made a message using symbol cards, to show that
- イ. Nyota was capable of feeling concern for the snake and the female bonobo.
 - ロ. having labels for things helps animals better understand their world.
 - ハ. bonobos are the most cognitively advanced of all non-human animals.
 - ニ. there’s little difference between bonobos and humans in the use of symbols.
6. The underlined word “imponderables” (paragraph 12) is closest in meaning to
- イ. data.
 - ロ. mysteries.
 - ハ. sensations.
 - ニ. surprises.
7. The author gives the example of the male bonobo who died of cancer to show that
- イ. scientists still don’t believe that animals feel sadness.
 - ロ. animal emotions are different from human emotions.
 - ハ. the other bonobos seemed to be experiencing sadness.
 - ニ. bonobos are one of the few species that feel emotion.
8. Results of the 2008 study by Frans de Waal showed that capuchin monkeys
- イ. did not understand how to use a token to buy slices of apple.
 - ロ. were willing to share apples with members of the Yerkes team.
 - ハ. did not use their tokens when unfamiliar monkeys were present.
 - ニ. were willing to share apples with other monkeys they knew.

9. One idea of the last paragraph is that animals' ability to experience their worlds
- イ. has developed in their interaction with humans.
 - ロ. is enough reason to respect their right to live.
 - ハ. has still not been proven scientifically.
 - ニ. is not equal to the ability of humans to do so.
10. The most appropriate title for this passage is
- イ. Animal Minds: Reasoning, Feeling, and the Sense of Self.
 - ロ. Which Animals Are the Smartest?
 - ハ. Self in the Mirror: How Do We Know Who We Are?
 - ニ. Recent Trends in Animal Behavior Research.

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。

Ask any doctor how to avoid the effects of the leading killers of Americans and you'll likely hear that eating healthier plays a big role. But knowing that food can influence health is one thing, and having the science and the confidence to back it up is another. And it's only relatively recently that doctors have started to bridge this gap.

It's hard to look at health outcomes like heart disease and cancer that develop over long periods of time and tie them to certain foods in the typical adult's varied diet. Plus, foods are not like drugs that can be tested in detailed studies that compare people who eat a cup of blueberries a day, for example, with those who don't to determine if the fruit can prevent cancers. Foods aren't as discrete as drugs when it comes to how they act on the body either—they can contain a number of beneficial, and possibly less beneficial, ingredients that work in different systems.

Doctors also know that we eat not only to feed our cells but also because of emotions, like feeling happy or sad. "It's a lot cheaper to put someone on three months of medicines to lower their cholesterol than to figure out how to get them to eat a healthy diet," says Eric Rimm, a professor of *epidemiology and nutrition at the Harvard School of Public Health. But drugs are expensive—the average American spends \$1,400 a year on medications—and if people can't afford them, they go without, increasing the likelihood that they will progress to severe stages of their illness, which in turn forces them to require more—and costly—health care. What's more, it's not as if the medications are cure-alls; while deaths from heart disease are declining, for example, the most recent report from the American Heart Association showed that obesity increased from 30.5% in 1999–2000 to 37.7% in 2013–2014, and 40% of adults have high total cholesterol.

What people are eating contributes to those trends, and making nutrition a bigger priority in health care instead of an afterthought may finally start to reverse them. Although there aren't the same types of rigorous trials proving food's worth that there are for drugs, the data that do exist, from population-based studies of what people eat, as well as animal and lab studies of specific active ingredients in food, all point in the same direction.

The power of food as medicine gained scientific credibility in 2002, when the U.S. government released results of a study that compared a diet and exercise program with a drug treatment for Type 2 diabetes. The Diabetes Prevention Program compared people assigned to a diet low in fat, sugar, and salt that included lean protein and fresh fruits and vegetables with people assigned to take metformin (a type of diabetes drug) to lower blood sugar. Among people at high risk of developing diabetes, those taking metformin lowered their risk of actually getting diabetes by 31% compared with a control group, while those who modified their diet and exercised regularly lowered their risk by 58% compared with those who didn't change their behaviors, a near doubling in risk reduction.

Studies showing that food could treat disease as well soon followed. In 2010, heart expert Dr. Dean Ornish, of the University of California, developed a lifestyle-based program for treating heart disease. Under his plan, people who had had heart attacks switched to a low-fat diet, exercised regularly, stopped smoking, lowered their stress levels with meditation, and strengthened their social connections. In a series of studies, he found that most followers lowered their blood sugar, blood pressure, and cholesterol levels, and also reversed some of the blockages in their heart arteries, reducing their episodes of sudden chest pain.

In recent years, other studies have shown similar benefits for healthy eating patterns like the Mediterranean diet—which is high in good fats like olive oil and omega-3s (fish oil), nuts, fruits, and vegetables—in preventing repeat events for people who have had a heart attack. “It's clear that people who are coached on how to eat a Mediterranean diet high in nuts or olive oil get more benefit than we've found in similarly conducted trials of cholesterol medication,” says Rimm. Researchers found similar benefit for people who have not yet had a heart attack but were at higher risk of having one.

Animal studies and analyses of human cells in the lab are also starting to expose why certain foods are associated with lower rates of disease. Researchers are studying compounds like omega-3s found in fish and polyphenols in apples, for example, that can prevent cancer tumors' ability to grow new blood vessels. Nuts and seeds can protect parts of our ^{**}chromosomes so they can repair damage they encounter more efficiently and help cells stay healthy longer.

If food is indeed medicine, then it's time to treat it that way. In his upcoming book, *Eat to Beat Disease*, Dr. William Li, a heart expert, pulled together years of accumulated data and proposes specific doses of foods that can treat diseases ranging from diabetes to breast cancer. Not all doctors agree that the science supports administering food like drugs, but he's hoping the controversial idea will prompt more researchers to study food in ways as scientifically careful as possible and generate stronger data in coming years. "We are far away from prescribing diets specifically to fight disease," he says. "And we may never get there. But we are looking to fill in the gaps that have long existed in this field with real science. This is the beginning of a better tomorrow."

*epidemiology : 疫学

**chromosomes : 染色体

1. One idea of the first paragraph is that
 - イ. science has begun to support doctors' intuitions about food.
 - ロ. doctors aren't really sure whether food affects health.
 - ハ. science has little influence on what people want to eat.
 - ニ. doctors don't like to be asked about healthy eating.

2. The underlined word "discrete" (paragraph 2) is closest in meaning to
 - イ. complex.
 - ロ. final.
 - ハ. specific.
 - ニ. valid.

3. One idea from the second and third paragraphs is that
 - イ. doctors tend to ignore scientific research on healthy eating.
 - ロ. the effect of food on human health appears direct and easy to observe.
 - ハ. food preferences are hard to change because of their link to emotions.
 - ニ. doctors should set an example to their patients by eating healthy foods.

4. The passage suggests all the following about drugs EXCEPT that they are
- イ. effective in reducing cholesterol.
 - ロ. too expensive for some Americans.
 - ハ. responsible for higher obesity rates.
 - ニ. convenient for doctors to prescribe.
5. The underlined word “rigorous” (paragraph 4) is closest in meaning to
- イ. actual.
 - ロ. concerned.
 - ハ. sensible.
 - ニ. thorough.
6. The Diabetes Prevention Program found that people who ate a healthy diet had
- イ. the same risk of getting diabetes as did people who took a drug.
 - ロ. double the risk of getting diabetes as did people who took a drug.
 - ハ. the same risk of getting diabetes as did people who ate normally.
 - ニ. a much lower risk of getting diabetes than did people who ate normally.
7. The passage suggests that the Mediterranean diet is
- イ. more effective than medicine in treating heart disease.
 - ロ. not different in content from other patterns of healthy eating.
 - ハ. difficult for people to follow on a regular basis.
 - ニ. not yet supported by scientific research.
8. Recent laboratory studies have helped explain
- イ. why it is difficult to isolate specific compounds in food.
 - ロ. the healthy eating patterns of wild animals.
 - ハ. why healthy foods do not seem to help in the treatment of cancer.
 - ニ. the biological process by which certain foods protect against disease.

9. In *Eat to Beat Disease*, Dr. William Li argues that
- イ. there's no need to rely on science to tell us how to eat well.
 - ロ. certain foods can be used to treat specific diseases.
 - ハ. a combination of drugs and diet is the best way to fight disease.
 - ニ. certain foods cause specific diseases and should be avoided.
10. The most appropriate title for this passage is
- イ. Food as Medicine.
 - ロ. The Best Foods for a Healthy Heart.
 - ハ. Dietary Trends in the United States.
 - ニ. The Science of Staying Healthy.

Ⅲ. 次の1～8のそれぞれにおいて、下線部イ～ニのうち、英語表現上正しくないものを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. The Arctic is warming two to three times faster than the rest of the planet, with most of the temperature increase occurs in the winter.
イ ロ
ハ ニ
2. When someone's DNA shows up at a crime scene, he or she could accuse of committing a crime.
イ ロ ハ
ニ
3. A little more than one in every three adults reported sleeping a fewer than the recommended seven hours a night.
イ ロ ハ
ニ
4. Experts at a meeting on the recent rise of Ebola have expressed grave concerns over the regional threat posed by the increase number of cases.
イ ロ
ハ ニ
5. Linguists traditionally have thought that humans have always been capable at making all the sounds used in the roughly 7,000 languages still spoken today.
イ ロ
ハ ニ
6. A new study showed that the more highly processed foods that black bears ate, the less time those bears were like to spend sleeping in winter.
イ
ロ ハ ニ

7. Besides decreasing the anxiety that can keep you from falling asleep, meditation may actual help restore your brain in the same way sleep does.
8. Reported cases of influenza worldwide were higher in the first three months of 2019, comparing with the same period in 2018.

IV. 次の空所(1)~(6)を補うの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. At the bus stop

Thomas: Excuse me, sir. Is this the bus to Shinjuku?

Jerome: No, this bus goes to Ikebukuro. To get to Shinjuku you need to cross the street and catch a bus going the other way.

Thomas: (1)?

Jerome: I'm not sure. You should check the schedule. But I think the bus to Shinjuku usually comes every 10 minutes or so.

Thomas: Thank you for your help!

- (1) イ. How often do the buses run
ロ. What time is it right now
ハ. Can I use my credit card
ニ. Are you going to Shinjuku

B. Between friends

Takeshi: I heard that you finally had a date.

Gordon: You mean, my dinner with Mary?

Takeshi: (2) So, how did it go?

Gordon: Well, first of all, it wasn't a date. It was just dinner.

Takeshi: Yeah, right, with the girl of your dreams!

- (2) イ. When was it?
ロ. Yes, please.
ハ. No, really?
ニ. What else?

C. At work

John: This new project may not work out the way you planned.

Matilda: (3) I'm willing to take the risk.

John: Well, that's fine. Still, I want you to know what you're getting into.

Matilda: I understand. Let's do it, anyway.

John: Alright, but don't say that I didn't warn you.

(3) ㄱ. I don't care.

□. Good work?

ㄷ. I forgot.

ㄴ. Sounds great.

D. At the courthouse

Judge: Several witnesses claim you stole your neighbor's car. How do you plead?

Sam: I plead not guilty.

Judge: But, you were found driving the car by the police.

Sam: I only borrowed the car to go to the convenience store. (4)

Judge: It is, if you break into a person's house to take their car keys!

(4) ㄱ. Isn't that allowed?

□. Is that illegal?

ㄷ. Isn't it safe?

ㄴ. Is that her fault?

E. At the art studio

Pablo: Why did you paint a picture of blackbirds flying over a corn field?

Vincent: The painting expresses my feelings at the time.

Pablo: Are the blackbirds a symbol of freedom?

Vincent: (5). As they fly away, my feelings also fly into the air.

Pablo: So, it's a hopeful painting?

Vincent: Yes. This painting is about flight, hope, and being free.

- (5) ㄱ. Well, sort of
 ㅋ. That's what I did
 ㆁ. Absolutely not
 ㄴ. Probably not

F. At school

Teacher: Wow, it's really hot today.

Principal: Yes, be sure the students don't overheat at the playground.

Teacher: OK, I've got plenty of water for them to drink.

Principal: That's a good start. They should also take regular breaks in the shade.

Teacher: Good idea. (6)

Principal: After every twenty minutes, have them rest for ten.

Teacher: OK, so we'll rest twice every hour.

- (6) ㄱ. How hot will it be?
 ㅋ. What time?
 ㆁ. How often is best?
 ㄴ. When should we come home?

V. 次の空所(1)～(6)それぞれにもっとも適当な1語を補い、英文を完成せよ。解答は解答用紙の所定欄にしるせ。

Singapore is growing quickly. With more than 5.9 million people (1) live on just 719 square kilometers, the country is one of the most densely populated in the world.

For decades, the island state has been expanding on the back of imported sand. Singapore has brought in massive amounts of sand from its Asian neighbors and dumped it in its coastal waters. Land claimed from the sea in this way has increased Singapore's size by almost a quarter (2) 1965, and helped its population to triple. But environmental concerns—much of the sand was taken from mangrove forests in Cambodia—have (3) to stricter controls and complete bans on importing sand.

Now Singapore is looking for (4) way to grow. Instead of building more land, the city wants to build on the sea's surface, with a system of giant floating rafts connected to the seabed. But first, engineers have to solve a difficult problem: How to stabilize the rafts?

To do this, engineers propose grids of more than 40 individual floats, each of which would be 35 meters square—slightly bigger than a baseball diamond—12 meters high, and weighing more than 7.5 tons. The grids would be connected to a nearby island and sit in calm sea that is about 18 meters deep. To keep (5) stable, hinges and springs would lessen the bumps from waves.

Singapore is (6) alone in its aim to expand. Faced with growing populations, rising sea levels, and shrinking amounts of available land to build on, other coastal cities and regions, from Hong Kong to the Netherlands, are eyeing the creation of floating marine real estate.

【以下余白】

