2018年度

# K 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**16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，消しく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。

When Janet Hemingway started her career in mosquito research in 1977, a child was dying of malaria every 10 seconds. Yet the disease, and the mosquitoes that carry it, were low on the global health priority list. Today, the landscape has been transformed. Scientists at the prestigious Liverpool School of Tropical Medicine (LSTM) in the United Kingdom, which Hemingway now heads, have sequenced the genomes of at least 23 mosquito species, looking for clues that might help them conquer the disease. And malaria has surged to the top of the global agenda. Thanks to a mass of new funds, deaths have declined.

But one thing hasn't changed. The world still relies on the same class of insecticides, known as pyrethroids, as it did in 1977. Now, in part because of that neglect, these compounds may be nearing the end of their useful lives as mosquitoes develop resistance to them at alarming rates, and there is little ready to replace them. "If we don't do something about this very quickly, we have a public health catastrophe on our hands," Hemingway says. Malaria mosquitoes that are resistant to pyrethroids have spread across Africa in recent years, increasing fears that malaria cases will rise again.

Pyrethroids have played an outsized role in the global fight against malaria in the last decades. They are the main chemicals used to spray the inside walls of homes (so-called indoor residual spraying, or IRS) to kill the *Anopheles* mosquitoes that transmit the disease. And they are the only insecticides that can be used on bed nets. Much of the global success in fighting malaria has come from these two interventions. In an article last year, a group led by Simon Hay at the University of Oxford in the United Kingdom estimated that between 2000 and 2015, some 633 million malaria deaths were prevented, with 68% of that decline due to insecticide-treated bed nets and 10% to IRS. Treating people with antimalarial drugs accounted for the remaining 22%. Pyrethroids have also played a role in the fight against *Aedes aegypti*, the main mosquito transmitting the yellow fever, dengue, and Zika viruses, even though bed nets are less effective against *Aedes aegypti* because it predominantly bites people outdoors and during the day.

Pyrethroids have several distinct advantages: They kill mosquitoes efficiently, act rapidly, and, although toxic, are safer for humans than the alternatives. But when the massive rollout of insecticide-treated bed nets began in Africa in the early 2000s—more than a billion have been distributed—little thought was given to resistance, says Maureen Coetzee, director of the Wits Research Institute for Malaria at the University of the Witwatersrand in Johannesburg, South Africa. "Nobody dreamed that insecticide resistance would spread the way it has spread throughout Africa."

Scientists shouldn't have been surprised, however. An earlier insecticide, DDT, played a major role in driving down malaria cases starting in the 1940s. But in many places, resistance reversed those gains. In Sri Lanka, for instance, malaria was all but wiped out with the help of DDT, but by the end of the 1960s, when resistance was widespread, cases increased rapidly to more than half a million a year. By that time, Rachel Carson had highlighted the poisonous effects of DDT in her famous book, *Silent Spring*, and many nations banned its use.

Nor has there been much incentive for companies to develop new mosquito-killing insecticides, which could be used with existing ones to slow the development of resistance. Most research and development has focused on agricultural chemicals, a far more profitable market. "No publicly traded company is going to spend the money required to discover and develop and take to the market an insecticide for public health," says Nick Hamon, who heads the Innovative Vector Control Consortium (IVCC) in Liverpool. "These companies are looking for $100 million in sales every year to have any chance of regaining the money for a new compound."

First detected in Ivory Coast in 1993, resistance to pyrethroids was relatively rare until about 10 years ago, when it began racing across the continent. "Some countries are seeing an increase in malaria transmission, and resistance is one of the probable causes," Coetzee says. It's hard to be sure, she says, because drug shortages or cutbacks of control programs may also be having a harmful effect. But Hilary Ranson of LSTM thinks the problem is real and will only get worse. "I think insecticide resistance is a time bomb."

Many scientists have their hopes pinned on new approaches to mosquito control that would be less likely to run into resistance or prove poisonous, such as mosquitoes genetically modified to die young, traps that attract the insects to their death, or insecticidal bacteria or *fungi. "We need to diversify in terms of the kind of tools that we use to control mosquitoes and not focus it entirely on chemical control," says Willem Takken of Wageningen University and Research in the Netherlands. But Hemingway and other scientists caution that even if these new tools prove their mettle, they are years away at best. The first priority, Hemingway says, is to preserve and improve the tools we know work. And to her, that means insecticides.

That's why, in 2005, Hemingway started IVCC, a public-private partnership that aims to develop entirely new classes of insecticides and get them on the market in 5 to 8 years. Since IVCC's establishment, the Bill and Melinda Gates Foundation has contributed more than $200 million, and the U.S. Agency for International Development, the Wellcome Trust, and others have each contributed millions. In the meantime, IVCC is rushing to help scientists find smarter ways to use existing insecticides or combine them with other interventions in a way that keeps resistance at bay.

*fungi：菌類

1. When Janet Hemingway first began her research on mosquitoes in 1977,

イ. scientists did not yet understand what caused malaria.

ロ. mosquitoes were not yet causing the spread of disease.

ハ. pyrethroids were already being used as insecticides.

ニ. malaria was a top concern of global health organizations.

2. Hemingway thinks that we may soon have a "public health catastrophe" (paragraph 2) because

イ. mosquitoes have developed resistance to pyrethroids.

ロ. insecticides have harmful effects on the human body.

ハ. mosquitoes are spreading new diseases even worse than malaria.

ニ. the population of African mosquitoes has increased.

3. The underlined word "outsized" (paragraph 3) is closest in meaning to

イ. abnormal.

ロ. enormous.

ハ. indirect.

ニ. unrecognized.

4. One characteristic of pyrethroids is that

イ. mosquitoes have learned how to stay away from them.

ロ. they are not harmful to human health.

ハ. mosquitoes die long after being exposed to them.

ニ. they are effective against more than one species of mosquito.

5. The passage suggests that insecticide-treated bed nets

イ. are one reason for the recent increase in insecticide resistance.

ロ. have had little effect on malaria transmission in the last few decades.

ハ. are more effective in the fight against yellow fever than malaria.

ニ. can be coated with a wide variety of insecticides.

6. The author gives the example of "DDT" (paragraph 5) to show that

イ. insecticides are not a good way to fight disease.

ロ. Sri Lanka is a success story in the fight against malaria.

ハ. mosquitoes' resistance to pyrethroids should not be a surprise.

ニ. DDT was more effective against malaria than pyrethroids.

7. Chemical manufacturing companies are reluctant to develop new mosquito insecticides because

イ. there is little prospect of mosquitoes developing resistance in the future.

ロ. earnings from such insecticides aren't likely to match the costs of research.

ハ. companies have not received government assistance for such an endeavor.

ニ. chemicals for agriculture are easier to make than those for public health.

8. The underlined word "mettle" (paragraph 8) is closest in meaning to

イ. existence.

ロ. point.

ハ. rank.

ニ. strength.

9. Hemingway would most likely agree that we should

イ. rely on a diversity of insecticides in the fight against malaria.

ロ. focus on the treatment of malaria rather than its transmission.

ハ. continue to rely on pyrethroids to control mosquitoes in Africa.

ニ. focus on how to control mosquitoes without using insecticides.

10. The most appropriate title for this passage is

イ. The Rise of Disease-Bearing Mosquitoes in Africa.

ロ. Insecticides and Their Effect on Public Health.

ハ. The Continuing Battle Against Infectious Mosquitoes.

ニ. New Approaches in the Treatment of Tropical Disease.

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。

The famed parrot Alex had a vocabulary of more than 100 words. Kosik the elephant learned to "speak" a bit of Korean by using the tip of his trunk the way people whistle with their fingers. So it's puzzling that our closest ancestors are limited to making certain sounds. For decades, monkeys' and apes' vocal anatomy has been blamed for their inability to reproduce human speech sounds, but a new study suggests macaque monkeys—and by extension, other primates—could indeed talk if they only possessed the brain wiring to do so. The findings might provide new clues to anthropologists and language researchers looking to specify when humans learned to speak.

"This certainly shows that the macaque vocal tract is capable of a lot more than has previously been assumed," says John Esling, a linguist at the University of Victoria in Canada, who was not involved with the work. The study's lead author, William Fitch, an evolutionary biologist at the University of Vienna, says the question of why monkeys and apes can't speak goes back to Charles Darwin. Darwin thought nonhuman primates couldn't talk because they didn't have the brains, he says. But over time, anthropologists instead embraced the idea that the primates' vocal tracts were holding them back: They simply lacked the flexibility to produce the wide range of vowels present in human speech. That remains the "textbook answer" today, Fitch says.

He and study co-author Asif Ghazanfar, a neuroscientist at Princeton University, suspected Darwin had it right. So they trained Emiliano, a long-tailed macaque at Princeton's primate lab, to sit in a chair while they shot X-ray video of him eating, yawning, and making a variety of vocalizations and lip smacks.

Analyzing X-ray images from the video, the team assembled a collection of 99 different arrangements of Emiliano's vocal tract, which is the open space sound flows through as it emerges from the *larynx, then flows over the tongue and out the lips. "Essentially, we built up a model of all the possible things the monkey's vocal **anatomy could do," Fitch says.

Next, the researchers employed a series of linguistic tools that measure which arrangements of the lips, tongue, and larynx can produce the frequencies that correspond to various vowel sounds. Some languages have fewer than five vowels, the most common number, but vowels are essential to human speech. Calculating the macaque's so-called "vowel space," Fitch and Ghazanfar discovered that—at least theoretically—he, too, could produce five distinctive vowels, roughly equivalent to the A, E, I, O, and U in English.

Finally, the researchers input Emiliano's vocal tract arrangements into a computer program that simulates vowel and consonant production given different anatomical settings. They picked a phrase that would <u>show off</u> a wide vowel range, "Will you marry me?" and ran it through a simulation of the monkey's vocal tract. Compared with a human, the simulated monkey's voice sounds flat and gravelly, but the words are clear and comprehensible.

The results suggest that, anatomically speaking, macaques are perfectly well equipped for humanlike speech, the researchers report today in *Science Advances*. And because their vocal anatomy is nearly identical to that of other monkeys and apes—and to most other mammals—these animals are "speech-ready," too, Fitch says.

So why can't Emiliano chat with his handlers? Monkeys and apes lack the neural control over their vocal tract muscles to properly arrange them for speech, Fitch concludes. "If a human brain were in control, they could talk," he says, though it remains a bit of a mystery why other animals can produce at least basic speech.

At some point in the 8 million or so years since we split from chimpanzees, our closest living evolutionary relatives, human brains gained substantial control over the vocal tract, Fitch says. Anthropologists who take the ***fossil record for evidence of when our human ancestors learned to speak are "wasting their time," he says, because our ancestors had vocal anatomies capable of speech. Instead, the field should focus on genetic factors known to be necessary for proper speech and language development, to figure out when humans gained the gift of speech.

Dan Dediu at the Max Planck Institute for Psycholinguistics in Nijmegen, the Netherlands, says the study's results open new doors for investigating modern languages as well. He thinks slight population-level differences in vocal anatomy could explain why various languages have different sound properties. "Even a monkey's vocal tract can support spoken language, but its intricate details might determine what sort of spoken language actually emerges," he says. "I might even think about adding to my simulations a monkey vocal tract and see what happens."

*larynx：咽頭

**anatomy：解剖学的構造

***fossil：化石

1．One idea of the first paragraph is that macaque monkeys

イ．can speak better than parrots and elephants.

ロ．have a vocal anatomy that is adequate for speech.

ハ．might be able to speak with enough practice.

ニ．followed the same steps as humans in learning how to speak.

2．William Fitch's research

イ．challenges Darwin's belief about why monkeys can't talk.

ロ．introduces a new theory about why monkeys can't talk.

ハ．challenges the "textbook answer" as to why monkeys can't talk.

ニ．introduces new evidence showing that monkeys do talk.

3．In their experiment, Fitch and Asif Ghazanfar

イ．kept a written record of Emiliano's vocalizations.

ロ．measured the airflow from Emiliano's larynx.

ハ．taught Emiliano to imitate 99 sound patterns.

ニ．analyzed pictures of Emiliano's vocal tract.

4．Fitch and Ghazanfar used a computer program

イ．to identify the vowel sounds most suited to a monkey's vocal tract.

ロ．to simulate what Emiliano's speaking would sound like.

ハ．to identify vocal tract features most suited to human speech.

ニ．to simulate what a human with a monkey's vocal tract would sound like.

5. The underlined words "show off" (paragraph 6) are closest in meaning to

イ. affect.

ロ. display.

ハ. limit.

ニ. teach.

6. All of the following are true EXCEPT that Fitch and Ghazanfar

イ. assumed that vowel sounds are central to human speech.

ロ. did not hear Emiliano produce five distinct vowel sounds.

ハ. studied the meaning of Emiliano's vocalizations.

ニ. think that their findings can be applied to other kinds of monkey.

7. According to Fitch, the best way to investigate when humans acquired speech is to figure out

イ. when neural control over the vocal tract developed.

ロ. when humans diverged from chimpanzees.

ハ. when the vocal tract became capable of producing human language.

ニ. when humans invented grammar.

8. According to Dan Dediu, human vocal anatomy

イ. might have been shaped by the rise of human language.

ロ. is fundamentally different from monkeys' vocal anatomy.

ハ. might be related to differences in modern human languages.

ニ. is the same in all human groups.

9. The underlined word "intricate" (last paragraph) is closest in meaning to

イ. appropriate.

ロ. fine.

ハ. outstanding.

ニ. pure.

10. The most appropriate title for this passage is

イ. The Vocal Anatomy of Macaque Monkeys.

ロ. When Did Humans Learn to Speak?

ハ. Recent Research on Primate Communication.

ニ. Why Can't Monkeys and Apes Talk?

**Ⅲ.** 次の空所(１)～(８)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.

A Japanese housekeeping services provider welcomed eight foreign employees Monday as the country opens its doors to overseas recruits to help a labor shortage ( 1 ) the industry. The eight Filipino employees, ranging ( 2 ) age from 25 to 38, all have experience housekeeping for Japanese families in the Philippines. ( 3 ) completing two weeks of training, the workers will start their three-year contracts. Japanese staff will accompany them to customers' homes. Half of the Filipino staff will be placed in Yokohama, with the rest assigned to work in Osaka. The company aims to hire eight more foreign housekeepers this year ( 4 ) assignment in Tokyo, and it hopes to employ about 100 foreign workers over the next five years.

| | | | | |
|---|---|---|---|---|
| (１) | イ. affect | ロ. affected | ハ. affecting | ニ. being affected |
| (２) | イ. at | ロ. between | ハ. by | ニ. in |
| (３) | イ. After | ロ. By | ハ. During | ニ. Since |
| (４) | イ. as | ロ. behind | ハ. during | ニ. for |

B．

Richard Walker has been trying to overcome aging since he was 26 years old. He was worried that aging would ( 5 ) take away his vitality and that with each passing day his body would become weaker. One evening he went for a drive in his car and decided that by his 40th birthday, he would find a ( 6 ) for aging. When ( 7 ) why he's so upset by aging, he says it comes from childhood, when he watched his grandparents get older and weaker. At his grandparents' funerals, he couldn't help but think about how much he had always wanted to be able to do things with them. He felt robbed. "To say I love life is ( 8 )," he says. "Life is the most beautiful and magical of all things."

| | | | | |
|---|---|---|---|---|
| (5) | イ. continually | ロ. eventually | ハ. nevertheless | ニ. temporarily |
| (6) | イ. cure | ロ. help | ハ. measure | ニ. response |
| (7) | イ. ask | ロ. asked | ハ. asking | ニ. asks |
| (8) | イ. foolish | ロ. nonsense | ハ. obvious | ニ. ordinary |

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.

Husband: What a great hotel room! Hey, honey. Come look at this view! ( 1 ).

Wife: It's OK, but it's become so touristy.

Husband: Well, that's just a sign of the times. ( 2 ).

Wife: That doesn't change what it's like now.

Husband: Boy, you sure are being negative.

Wife: You like cities. You know I'm more of a country girl.

Husband: Cities are wonderful. I love the crowds and the action. And the history. Just look at how beautiful it is.

Wife: You sound like ( 3 ).

Husband: You don't think it's beautiful?

Wife: I admit it's pretty. But so are many other places.

Husband: But Paris! No other city compares.

(1) イ. There's no city like this in the world
ロ. It's too far from the station
ハ. It's so packed with people
ニ. Things have changed so dramatically

(2) イ. People like to go on vacations
ロ. History shouldn't be forgotten
ハ. Everyone likes to go to famous places
ニ. But just imagine what it was like before

(3) イ. you know everything
ロ. you've never seen a city before
ハ. you have something I don't
ニ. you're a country boy

B.

Jennifer: How's business? ( 4 )?

Gary: Yes, I met with some this week. Things are getting busy.

Jennifer: That's great. But I hope you don't have anything scheduled for Saturday.

Gary: Why?

Jennifer: ( 5 ). I'm booked to give a speech this Saturday, but now I can't go. You'd be perfect. Are you free?

Gary: Did you say Saturday or Sunday?

Jennifer: Saturday.

Gary: ( 6 ) Send me an email about the topic, time, and location.

Jennifer: I'll do that right away. Thanks a lot!

Gary: No problem.

(4) イ. Are you working a lot of hours

ロ. Have you found a new job

ハ. Do you like your work

ニ. Are you finding new clients

(5) イ. Because you've been too busy

ロ. I need some help

ハ. Because I want to take you somewhere

ニ. I want you to take a break

(6) イ. Yeah, why wouldn't I be?

ロ. Sure, we can set the time limit.

ハ. Yeah, I'm available.

ニ. Sure, if you wouldn't mind?

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。

My nine-year-old son ran into my study one day and asked, “Mom, what do you think about my story? I wrote it at school today.” I ( 1 ) my writing and looked at it. He had received an A for his writing. The story was interesting, but there were some obvious grammatical mistakes. Since my mind was ( 2 ) on my work, I said, without too much thought, “It’s good.” My son said, “Good? What do you mean good? It’s not just good. It’s excellent! I’ve spent a lot of time working on it, and my teacher said several times to me that it is excellent!” I thought that I might have been too harsh on him. I should have been more ( 3 ) about his story. “Let me look at it again,” I said immediately. After glancing at it briefly, I said, “You’re right. It is one of the best stories you have written. Thank you so much for ( 4 ) it with me.” I hoped this would help maintain his high ( 5 ) of interest in writing. I did not want to give him the wrong impression that what he had done was not good ( 6 ) for me. Even more importantly, I wanted him to enjoy the process of writing.