

# 英 語

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## 注 意 事 項

1. 「解答始め」の合図があるまでこの冊子は開かないこと。
2. この冊子は表紙を除いて 14 ページである。
3. 「解答始め」の合図があったら、まず、黒板等に掲示又は板書してある問題冊子ページ数・解答用紙枚数・下書き用紙枚数が、自分に配付された数と合っているか確認し、もし数が合わない場合は手を高く挙げ申し出ること。次に、受験番号・氏名を必ずすべての解答用紙の指定された箇所に記入してから、解答を始めること。
4. 解答は、必ず解答用紙の指定された箇所に記入すること。

**1** 次の英文 (Birds Sing Better with Some Early Morning Practice) を読み、設問に答えなさい。

There may be a good reason why birds are most vocal at first light, according to new research. By singing early and often, birds perform better during the day, a new study suggests.

The morning cacophony is mostly males, whose songs are meant to impress potential mates and rivals. “It’s like they’re warming up backstage, before the sun comes up and the curtain rises,” says coauthor Stephen Nowicki, a biology professor at Duke University. Scientists have proposed various hypotheses for why birds do their most vigorous singing in the early morning hours. One idea is that it’s the best time to broadcast, since there’s little wind to distort their sound. Others have suggested that the weak light makes it difficult to do much else, like hunt for insects.

But the new study points to another benefit: the early morning vocal warm-up vastly improves their singing. To test the “warm-up hypothesis,” Nowicki and biologist Susan Peters recorded 11 male swamp sparrows between 2 AM and noon for two to three mornings each. The song of the swamp sparrow is a simple trill of up to five notes, repeated around 5 to 10 times a second. It sounds a bit “like a melodious police whistle,” Nowicki says.

Birdsong may look effortless, but it requires balancing competing demands of speed and dexterity, says first author Jason Dinh, a biology PhD student who did the study while still an undergraduate. Birds switch from one note to the next by opening and closing their beaks. To go from low to high and back down again in rapid-fire succession, a bird must precisely coordinate the movements of their beak and voice box with each breath.

To monitor the birds’ performance, the researchers measured each bird’s trill rate and vocal range over the course of the morning. For swamp sparrows, the concert can start as early at 2:30 AM. But they don’t wake up singing like virtuosos, the researchers found. Statistical analysis of the recordings revealed that they start off

taking it easy; singing slower, or with a more limited range. They only start to nail their songs — picking up the tempo and reaching for higher and lower pitch — just after dawn, after hundreds of takes. The more they warmed up, the better they got. “They’re able to perform more difficult songs later in the morning,” Dinh says. While it’s hard to make direct comparisons to the physiological effects in humans, Dinh says, the warm-up may help get their blood flowing and temperature rising to meet the physical demands of singing.

Previous playback experiments by this research team have shown that a well-sung song, compared to a rusty one, is a bigger turn-on for females and more threatening to eavesdropping males, Peters says. If male swamp sparrows see improvements in their singing within hours, the researchers say, the next step is to find out if females take note. If so, then males that sing early and often may have an advantage in attracting a mate.

(This article was excerpted and adapted from:

Smith-Duke, R. (August 21, 2020). Birds Sing Better with Some Early Morning Practice. *Futurity*. Retrieved from <http://www.futurity.org/birds-singing-practice-morning-2426512/> Last access: Aug. 10, 2023)

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|--------------------------|--------------------------|
| (注) cacophony : 不快な音・騒音  | distort : (音)をゆがめる・ひずませる |
| trill : (鳥の)さえずり・鳴き声     | dexterity : 器用さ・技能       |
| beak(s) : くちばし           | rapid-fire : 矢継ぎ早の       |
| virtuoso(s) : (音楽の)名手・巨匠 | eavesdrop : 盗み聞きをする      |

設 問

1. 下線部(1) “various hypotheses” について、本文で説明される二つの仮説を日本語で説明しなさい。
2. 下線部(2) “warm-up hypothesis” はどのような仮説か、本文の内容に即して日本語で説明しなさい。
3. swamp sparrow (ヌマウタスズメ) の鳴き声はどのようなものか、本文第3段落 (But the new study から始まる段落) の内容に即して日本語で説明しなさい。
4. swamp sparrow の鳴き声は、夜明け前から明け方にかけてどのように変化するか、本文の内容に即して日本語で説明しなさい。
5. 本文の内容に関する(a)から(e)の問いに対する答えとなるように、空所に入る適切な語を選択肢から一つずつ選び、**必要な場合には適切な形に変えて**答えなさい。

attract, broadcast, compare, improve, meet, raise, reach, repeat, rise, sleep, threaten, wake, wonder
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- (a) What is the main finding of the research?  
The research found that the birds sing early in the morning to \_\_\_\_\_ up their voices.
- (b) When do the birds produce their best songs?  
After dawn, when they speed up and \_\_\_\_\_ higher notes.
- (c) How did the researchers test their hypothesis?  
They \_\_\_\_\_ songs of the 11 male sparrows between 2 AM and noon.
- (d) What are the benefits of singing good songs?  
Good songs may \_\_\_\_\_ more female birds and threaten rivals.

(e) According to Dinh, why does the birds' warm-up help them sing better?

He thinks that the warm-up may help get their blood flowing and \_\_\_\_\_  
their temperature to meet the physical demand of singing.

6. 本文の要約として適切な文章になるように、次の(f)から(j)の空所に入る語を、本文中からそれぞれ一語で抜き出して答えなさい。

A study suggested that birds warm up their vocals in the \_\_\_\_\_ (f) morning to sing better during the day. Nowicki and Peters called this the warm-up \_\_\_\_\_ (g), and observed 11 swamp sparrows singing at different times of the day. They found that the birds started singing slower and with a more \_\_\_\_\_ (h) range, but gradually performed more difficult songs later in the morning. Birdsong may seem effortless, but it requires complex physical movement. The effect of early morning practice allows them to sing better during the day, appealing to a potential \_\_\_\_\_ (i) and threatening their \_\_\_\_\_ (j).

Imagine you live on the 20th floor of an apartment building in a city. You've got a business meeting on the 15th floor of a skyscraper a mile or so away. How do you get there? Sure, you could take the elevator down and then jump on the metro, hop in a cab or walk — before taking another elevator up.

But what if you could cycle to your meeting from the front door of your apartment — without ever going down to the street? Sound far-fetched? It shouldn't. Bicycle lanes in the sky may well be a prominent feature of our future cities. Here's why.

We're witnessing the biggest wave of urban growth in history. Today, more than <sup>(1)</sup>half of the global population lives in towns and cities. ( A ) By 2050, when the world's population is expected to reach 9 billion, two out of three people are likely to be living in urban areas. And the consequences of that are clear. As space gets insufficient and housing costs rise, billions of people will struggle to find affordable accommodation in our future cities. ( B )

Time is of the essence, then — and in more ways than one. The climate crisis requires us to build our cities more sustainably — and, in that respect, the only way is up.

Simply put, taller, denser cities are more energy-efficient than sprawling cities. ( C ) Of course, one problem with skyscraper cities is that getting from A to B takes much longer if you keep having to go up and down. And as the time cost of getting <sup>(2)</sup>around town rises, the economic efficiency of cities falls.

In other words, assuming our cities get taller and denser, we need to think more imaginatively about how we're going to get around them. ( D ) Right now, though, <sup>(3)</sup>many of the proposed answers begin and end on the ground floor.

<sup>(4)</sup>Take the 15-minute city — or the idea that all our necessities, from schools and shops to parks and libraries, shouldn't be more than a 15-minute walk or bike ride from home. The idea has captured the imagination not only of architects and urban planners but government officials and public policy makers, too. But how does it square with the unprecedented growth of our cities?

Others are betting on drones and unmanned aircraft. Exploring this technology and its uses, like food delivery or air taxis, is smart. But there are problems with it, too. For one thing, unmanned aircraft and drones are potentially dangerous. They can also be noisy and, some might say, an eyesore. Few of us want to live in a science-fiction movie. What's more, these emerging technologies are not especially energy-efficient.

Ultimately, though, what our fascination with any technology that involves VTOL — vertical take-off and landing — reveals is our lack of imagination about how to use urban airspace. What's interesting about drones isn't that they fly from one point on the ground to another. It's that they travel vertically as well as horizontally. The question is: Might we travel around the city in the same way?<sup>(5)</sup> To do so, we'll need to expand our thinking about the dimensions of travel. That means embracing the concept of Vertical Urban Mobility and exploring how it could complement today's "horizontal-first" thinking.

That brings us back to bike lanes in the sky. To see their potential, you need only visit Copenhagen. The Danish capital is home not only to the cycle-friendly "mountainside" paths but also to an elevated bike lane. Both offer a glimpse of how we could pair vertical and horizontal mobility in cities.

Many cities already provide alternative sources of inspiration for vertical urban mobility. Take, for example, the Teleferico Mexicable — a cable car that's helping to cut<sup>(6)</sup> pollution, traffic jams, and commuting times in an urban area north of Mexico City.

Whatever you make of these ideas, we do need to challenge the "flat earth thinking"<sup>(7)</sup> that leads to unsustainable urban sprawl. Some are already doing just that. In 2022, Saudi Arabia revealed plans to build a city over 160 kilometers long but only 220 meters wide. Unveiling the designs, Crown Prince Mohammed bin Salman said "the city's vertically layered communities will challenge the traditional flat, horizontal cities and create a model for nature preservation and enhanced human livability." Given the crisis we face, building higher will only get us so far. The sky may be the limit, but we need to expand our thinking about how we'll get around when we're up there.

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Last access: Aug. 10, 2023) @jmskibsted

(注) skyscraper : 超高層ビル	metro : 地下鉄
far-fetched : 信じがたい	sprawling : 無秩序に広がった
unprecedented : 前例のない	eyesore : 目ざわりな物
glimpse : 片鱗	

設 問

1. 下線部(1) “We’re witnessing the biggest wave of urban growth in history.” について、将来人口が都市部に集中することでどのような問題が生じると述べられているか、日本語で説明しなさい。
2. 下線部(2) “the time cost of getting around town rises” について、高層都市でこうした問題が生じるのはなぜか、日本語で説明しなさい。
3. 文中の( A )～( D )の空所のうち、次の文が入るのに最も適する場所はどこか、記号で答えなさい。

That’s why residents of Manhattan have the smallest carbon footprint in America.

4. 下線部(3) “many of the proposed answers begin and end on the ground floor” の内容として最も適切なものを、次の選択肢から一つ選び、記号で答えなさい。
  - (ア) Proposals tend to describe the ground floor plans at the beginning and end.
  - (イ) Proposals tend to focus on the underground plan.
  - (ウ) Proposals tend to recommend single floor structure.
  - (エ) Proposals tend to use the ground floor for entry and exit.
5. 下線部(4) “the 15-minute city” についての説明として最も適切なものを、次の選択肢から一つ選び、記号で答えなさい。
  - (ア) A city that requires a 15-minute limit on public transport journeys
  - (イ) A city where all essential facilities and services are within a 15-minute walk or bicycle ride
  - (ウ) A city where government workers, including architects and urban planners, commute no more than 15 minutes
  - (エ) A city with a 15-minute parking limit in the city center

6. 下線部(5) “in the same way” について, 「(ドローンと)同じように」というのはどのような移動の仕方か, 日本語で説明しなさい。

7. 下線部(6) “the Teleferico Mexicable” について, このケーブルカーで軽減されると考えられている都心部の問題は何か, 日本語で三つ挙げなさい。

8. 下線部(7) “flat earth thinking” について, ここでの「古い考え方」の内容として最も適切なものを, 次の選択肢から一つ選び, 記号で答えなさい。

- (ア) The idea that people move to live in the countryside instead of urban areas
- (イ) The idea that the average temperature of the earth is now stable
- (ウ) The idea that the gap between the urban and rural areas is narrowing
- (エ) The idea that the urban areas will expand horizontally as the population rises

試験問題は次に続く。

3

次の各文の( )に入る最も適切な語(句)を一つ選び、記号で答えなさい。

(1) My friends really enjoyed the movie, but frankly I was ( ).

(ア) bored

(イ) boring

(ウ) excited

(エ) exciting

(2) I will lend you my bike ( ) you return it tomorrow.

(ア) as if

(イ) as long as

(ウ) as soon as

(エ) so

(3) Momoka made a great ( ) with her presentation at a school speech contest.

(ア) impress

(イ) impression

(ウ) impressive

(エ) impressively

(4) The concert was not well advertised, so unfortunately there were ( ) people in the audience.

(ア) hardly

(イ) hardly any

(ウ) many

(エ) some

(5) ( ) her being an idol, her singing ability is not so great.

(ア) Although

(イ) Despite

(ウ) Even

(エ) However

(6) The meeting always offers a lively ( ) of ideas among many key leaders in the student council.

(ア) evaluation

(イ) exchange

(ウ) impact

(エ) procedure

(7) (        ) severe weather conditions, flights from Haneda Airport have been temporarily suspended.

(ア) As a result of

(イ) In spite of

(ウ) On behalf of

(エ) Provided that

(8) Dan (        ) his homework when the doorbell rang.

(ア) did

(イ) does

(ウ) is doing

(エ) as doing

(9) Whether you realize it or not, we are all (        ) affected by the people around us.

(ア) as much as

(イ) more or less

(ウ) no less than

(エ) no more than

(10) Although all of them have a university degree, many of the new employees do not consider (        ) to be qualified for the job.

(ア) it

(イ) itself

(ウ) them

(エ) themselves

4 Shoji と Miki が週休 3 日制 (Four-day workweek) について話をしています。下線部(1)~(4)の日本語を英語で表現しなさい。

Shoji: I heard on the news the other day about a big social experiment in the UK introducing a four-day workweek. Many companies seemed to have a positive impression of it. I think Japan should also introduce a four-day workweek.

Miki: It's not that simple. If the workload is the same, 1 日休みが増える分, 1 日当<sup>(1)</sup>たりの仕事量が増えてしまうかもしれないよ。 It may increase overtime and lead to more stress on workers.

Shoji: Yes, that may be true. If schools have a four-day school week, the number of classes daily may have to increase, and we probably have to study more outside of school.

Miki: 必ずしもいいことばかりではなく, 課題もありそうね。<sup>(2)</sup>

Shoji: But I think our work-life balance will improve. If we are able to spend more time with our families and friends, our well-being will improve, too. 3 日休みが<sup>(3)</sup>あれば, ちょっとした遠出もしやすくなると思う。 You can refresh your mind, and it will make you more productive.

Miki: Fair enough. There seem to be some good points to it. 週休 3 日制の利点と欠<sup>(4)</sup>点について, もう少し詳しく調べてみましょう。

5

次の A, B のいずれかの質問を選び, あなたの考えを 100 語から 120 語の英語で書きなさい。(解答用紙の A, B のいずれかを丸で囲むこと。)

A: What should you do to prepare for a typhoon? Give at least two things you need to do and why.

B: Why do you think it important to go to university? Give at least two reasons.

