

## 2020年度入学試験問題

# 外国語（英語）601

（前期日程）

表紙も問題・解答用紙も全て  
表面のみに印刷している。

### （注意事項）

- 1 問題・解答用紙は、係員の指示があるまで開かないこと。
- 2 この表紙を除いて、**問題用紙は3枚（その1～その3）、解答用紙は3枚（その1～その3）、下書き用紙は1枚**である。用紙の折り方は図のようになっているので注意すること。
- 3 解答は、**解答用紙（その1～その3）の指定された箇所に英語で書くこと。**  
指定された箇所以外に書いたものは採点しない。また、裏面に解答したものも採点しない。
- 4 **解答開始後、解答用紙の「受験番号」欄に受験番号をはっきりと記入すること。**
- 5 配布した用紙はすべて回収する。



## 外国語（英語） 601 その1（問題用紙）

第1問 次の文章を読んで、1～5の問いに英語で答えなさい。

Sea levels are rising. This threatens the future of millions of people around the world. It also threatens our cultural past. So now is the time to start thinking about sea-level rise. How are we going to protect the important cultural sites of the world? We need to know what's out there and what's threatened. Otherwise, it may become too late to save at least some of these sites.

Efforts to limit the worst impacts from climate change, including sea level rise, will require cutting greenhouse-gas emissions, for example. And maybe taking steps to limit flooding in important areas.

Another approach might be to move cultural treasures. But projects like that are often costly. It's unlikely that funds to do that will be available for every site. And some treasures simply can't be moved.

But high-tech tools might help preserve knowledge of those treasures before physical sites are lost, says Mark McCoy. He's an archaeologist at Southern Methodist University in Dallas, Texas. He recently suggested how this might be done at many sites in Polynesia. That's an area composed of many Pacific low-lying islands.

Rising seas endanger many of those islands — and their cultural treasures. If researchers used only traditional methods to map those places, “most would be gone before you got to them,” he says. Satellites with cameras and other remote-sensing tools, however, can more quickly and easily find and map many of these sites, he says. Those data can also help researchers assess the risks to particular spots.

Scanning and imaging tools can help, McCoy explains. For example, LIDAR is a type of system that uses lasers to make precise 3-D scans of objects. High-resolution digital photography can make detailed images. Computer technologies also can create 3-D virtual reality models. They may not save cultural sites, but they could preserve at least some knowledge about them for the future. His report appeared in the January 2018 issue of *Sustainability*.

Rising seas are likely to eventually bury a lot of archaeological treasures. And in some cases, the old techniques that archaeologists have long employed also may help. “I still use traditional methods out on a site when the conditions call for it,” McCoy notes. For instance, he notes, “Paper and pencil do not require batteries and don't break when I drop them on rocks.”

〈出典〉 Kathiann Kowalski, “Rising seas threaten thousands of world cultural sites,” *Science News for Students* (Jan 10, 2019). (一部改変)

1. What is expected to happen to cultural treasures when the sea level rises, according to this passage?
2. What are the two problems with moving cultural heritages?
3. What can satellites do for the protection of endangered cultural sites?
4. List the three things that modern scanning and imaging tools can do or make.
5. What are the two advantages of paper and pencil over high-tech instruments in conducting archaeological research?

## 外国語（英語） 601 その2（問題用紙）

第2問 次の文章を読んで、1～6の問いに英語で答えなさい。

My grandmother didn't study plant biology or agriculture. She didn't even finish high school. But she knew that she could get a hard avocado to soften by putting it in a brown paper bag with a ripe banana. She learned this magic from her mother, who learned it from her mother, and so on. In fact, this practice goes back to antiquity, and ancient cultures had diverse methods for getting fruit to ripen. The ancient Egyptians slashed open a few figs in order to get an entire bunch to ripen, and in ancient China people would burn ritual incense in a storage room of pears to get the fruit to ripen.

In the early twentieth century, farmers in Florida would ripen citrus in sheds heated by kerosene. These farmers were sure that the heat induced the ripening, and of course their conclusion sounds logical. You can imagine their dismay, then, when they plugged in some electric heaters near the citrus and found that the fruit didn't cooperate at all. So if it wasn't the heat, could the ripening magic be coming from the kerosene?

It turned out that it was. In 1924, Frank E. Denny, a scientist from the U.S. Department of Agriculture in Los Angeles, demonstrated that kerosene smoke contains minute amounts of a molecule called ethylene and that treating any fruit with pure ethylene gas is enough to induce ripening. The lemons he studied were so sensitive to ethylene that they could respond to a tiny amount in the air, at a ratio of 1 to 100 million. Similarly, it turns out that the smoke from the Chinese incense also contained ethylene. So a simple scientific model would posit that the fruit "smells" minuscule amounts of ethylene in the smoke and translates the smell into rapid ripening. We smell the smoke from a neighbor's barbecue, and we salivate; a plant detects some ethylene in the air, and it softens up.

But this explanation doesn't answer two important questions: First, why do plants respond to the ethylene in smoke anyway? And second, what about my grandma putting two fruits together in a bag and the Egyptians slashing their figs? Experiments carried out by Richard Gane in Cambridge in the 1930s point to some answers. Gane analyzed the air immediately surrounding ripening apples and showed that it contained ethylene. A year after his pioneering work, a group at the Boyce Thompson Institute at Cornell University proposed that ethylene is the universal plant hormone responsible for fruit ripening. In fact, numerous subsequent studies have revealed that all fruits, including figs, emit this organic compound. So it's not just smoke that contains ethylene; normal fruit emits this gas as well. When the Egyptians slashed their figs, they allowed the ethylene gas to easily escape. When we put a ripe banana in a bag with a hard pear, for example, the banana gives off ethylene, which is "smelled" by the pear, and the pear quickly ripens. The two fruits are communicating their physical states to each other.

Ethylene signaling between fruits didn't evolve so that we can have perfectly ripe pears whenever we crave them, of course. Instead, this hormone evolved as a regulator of plant responses to environmental stresses such as drought and wounding and is produced naturally throughout the life cycle of all plants (including little mosses). But ethylene is particularly important for plant aging as it is the major regulator of leaf senescence (the aging process that produces autumn foliage) and is produced in copious amounts in ripening fruit. The ethylene produced in ripening apples ensures not only that the entire fruit ripens uniformly but that neighboring apples will also ripen, which will give off even more ethylene, leading to an ethylene-induced ripening cascade of apples. From an ecological perspective, this has an advantage in ensuring seed dispersal as well. Animals are attracted to "ready-to-eat" fruits like peaches and berries. A full display of soft fruits brought on by the ethylene-induced wave guarantees an easily identifiable market for animals, which then disperse the seeds as they go about their daily business.

〈出典〉 Daniel Chamovitz, *What a Plant Knows* (Scientific American, 2012). (一部改変)

〈注〉 kerosene 灯油

## 外国語（英語） 601 その3（問題用紙）

1. Choose one to complete the following sentence. Answer (A), (B), (C), or (D).

The author's grandmother put a hard avocado in a brown paper bag with a ripe banana because \_\_\_\_\_.

- (A) she had never studied biology
- (B) she knew the paper bag would keep the fruit fresh
- (C) she wanted to keep them away from insects
- (D) she knew it would help ripen the avocado

2. What happened when the farmers in Florida used electric heaters for the citrus? Choose the correct answer from the following. Answer (A), (B), (C), or (D).

- (A) The citrus was not heated enough.
- (B) The citrus ripened too much and got rotten.
- (C) The citrus stayed unripe.
- (D) The citrus ripened.

3. What, other than fruits, contains the same substance that kerosene has?

4. What did the scientists at Boyce Thompson Institute suggest?

5. In reference to the underlined part, what happens to one piece of fruit when it gets a message from the other one?

6. (1) What happens to all the apples of a tree as a result of their communication?

(2) What benefit does a tree have in the end because of the communication among its fruit?

**第3問** 次の英文を読み、文中の指示に従って、80～100ワード程度の長さの英語の文章を書きなさい。ただし文章には以下の要素を含めること。

- (1) 自分の意見を述べる文 (Topic Sentence)
- (2) そう考える理由や根拠を述べる文 (Supporting Sentences)
- (3) 文章をしめくくる文 (Concluding Sentence)

In 2014, a movie titled *20 Feet from Stardom* won an Academy Award for the best documentary film. It is about some singers who helped to make the greatest popular music of the 20th century. Many of them had voices as good as the lead singers in their bands, but they were never the stars themselves. They say they sang, not to become famous but because they were born with a talent. It was a pleasure for them to use it. Don't you think that attitude is very different from ours today? Many people seem to believe that the best thing in life is being famous—a celebrity.

Do you want to be famous or are you satisfied just being good at something? State your answer and support it with specific reasons and examples.

〈出典〉 Sarah Dunant, "A Point of View: A disease called fame," *BBC News* (March 28, 2014). (一部改変)

外国語（英語） 601 その1（解答用紙）

第1問

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2. \_\_\_\_\_

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3. \_\_\_\_\_

4. . \_\_\_\_\_

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5. \_\_\_\_\_

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外国語（英語） 601 その2（解答用紙）

第2問

1. \_\_\_\_\_ 2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_  
\_\_\_\_\_

5. \_\_\_\_\_

6. (1) \_\_\_\_\_

(2) \_\_\_\_\_



下書き用紙