

英 語

〔理学部・工学部・農学部・水産学部・共同獣医学部(畜産)〕

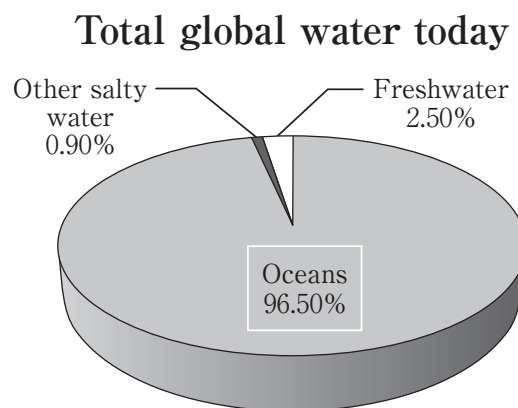
注 意 事 項

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 18 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(Desalination could avert one of the top 10 threats facing the world)を読み、設問に答えなさい。

Billions of people turn on a tap and expect clean drinking water to flow out, but this is not the reality for billions of others. Rapid population growth, urbanization and increased global water consumption by agriculture, industry and energy have left a growing number of countries facing the threat of water scarcity. In 2022, 2.2 billion people ⁽¹⁾lacked safely managed drinking water, including more than 700 million people living without a basic water service, according to the United Nations. By 2030, there could be a 40% global shortfall in freshwater resources, which combined with world population growth that's set to increase from 8 billion today to 9.7 billion by 2050, would leave the world facing an extreme water crisis.



One solution to meet the growing demand for freshwater is desalination, which involves removing the salt from seawater to produce drinking water.

Types of desalination

There are a number of different methods of desalination, but most work either by a process of reverse osmosis or multistage flash to remove the salt from seawater. Both desalination processes create brine containing high salt levels, which can pose a threat to marine ecosystems when released back into natural bodies of water.

The output of both methods is clean drinking water. But, in addition to removing

salt, the desalination process also removes organic or biological chemical compounds so the water produced doesn't transmit diarrhea or other diseases.

Wave-powered innovation

While reverse osmosis plants are more efficient than multistage flash plants, large-scale desalination plants require a lot of energy and maintenance, and are expensive to build and operate. A number of innovative desalination systems are being developed to try and reduce the energy required to operate them and related emissions. Oneka, a wave-powered desalination technology, is one such innovation. Floating buoys tied to the ocean floor use wave power to drive a pump that forces seawater through filters and reverse osmosis membranes. The fresh water is then piped back to the shore again⁽²⁾ powered solely by the natural motion of waves, explains Canadian desalination company Oneka Technologies. The system has several advantages over large-scale shore-based desalination plants that are mostly powered by combusting fossil fuels, but it does require high waves to work. The small floating units require 90% less coastal land compared with a typical desalination plant, for example, the company says. Relying on emissions-free wave power rather than electricity demands less energy and generates fewer emissions than traditional desalination plants.

(A) that reduce the energy needed to operate desalination plants and reduce greenhouse emissions from their operations could increase access to fresh drinking water for communities facing water challenges.

J.Wood(2024, April 15) Desalination: What is it and how can it help tackle water scarcity?, World Economic Forum (<https://www.weforum.org/stories/2024/04/desalination-drinking-water-water-scarcity/>)

(注) desalination : 海水淡水化 avert : 避ける shortfall : 不足
reverse osmosis : 逆浸透 multistage flash : 多段蒸発 brine : 塩水
diarrhea : 下痢 floating buoy : 浮標 membrane : 膜 combust : 燃焼する

設 問

1. 下線部(1)について, どのような原因による給水不足なのか, 日本語で説明しなさい。
2. 下線部(2)について, 海上でつくられた真水はどうなる仕組みなのか, 日本語で説明しなさい。
3. 空所(A)に入る最も適切な単語を次の選択肢から一つ選び, 記号で答えなさい。
 - (ア) Innovating
 - (イ) Innovations
 - (ウ) Innovated
 - (エ) Innovative
4. 本文で述べられている将来の世界の水事情を最も正確に反映している記述はどれか, 次の選択肢から一つ選び, 記号で答えなさい。
 - (ア) Every household will have clean water on tap.
 - (イ) 2.2 billion people will lack safe water.
 - (ウ) Water scarcity today could become a water crisis.
 - (エ) 9.7 billion people will face a water crisis.
5. 次のうち, Oneka Technologies 社の技術の利点でないものを次の選択肢から一つ選び, 記号で答えなさい。
 - (ア) It requires high waves to work well.
 - (イ) It requires much less land for its facilities.
 - (ウ) It does not produce a lot of exhaust.
 - (エ) It does not need electricity to run.

6. 二つの海水淡水化法を比較した下の表について、次のア、イ、ウ、エ、オにあてはまる語句を本文中から抜きだして英語で答えなさい。

Method	Removes	Problems
Reverse osmosis	<input type="text" value="イ"/>	They both require <input type="text" value="エ"/>
<input type="text" value="ア"/>	and <input type="text" value="ウ"/>	They are both <input type="text" value="オ"/>

7. 次の(ア)～(オ)について、本文の内容に合致するものには T (True) を、そうでないものには F (False) を選び、解答用紙の T, F のいずれかを丸で囲みなさい。

- (ア) The amount of water used for growing crops has decreased over time.
- (イ) We need more salt, so we extract it from sea water.
- (ウ) By 2030, freshwater resources could be 5% of total global water.
- (エ) The purpose of desalination is to produce fresh water.
- (オ) Many communities enjoy the challenge of drinking fresh water.

2

次の英文(Overseas Interest Rises for Japan's Abundance of Vacant Homes)を読み、設問に答えなさい。

Anton Wormann, a Swedish man, learned about an “akiya” abandoned vacant home in Tokyo and immediately requested a viewing. The wooden house showed clear signs that it had been empty and unmaintained for years. Dolls left at the entrance were covered in a layer of dust. A fan, a futon and an old Japanese-style dresser-drawer remained on the second floor, untouched (A). And under ⁽¹⁾the Building Standards Law, the property, facing a narrow street, could not be torn down and rebuilt because doing so might block fire trucks, ambulances and evacuation routes in an emergency. Nevertheless, Wormann, 31, said, “I want it.” The homeowners were surprised. “You want to buy it? Are you sure?”

Foreign buyers, like Wormann, may hold the key to (a) Japan's growing problem of vacant homes. According to an internal affairs ministry survey, Japan had roughly 8.49 million vacant homes in 2018, accounting for 13.6 percent of all housing (B). The number was up about 1.5 times from 5.76 million in 1998. Unattended homes are expected to further surge in number after 2025 as the baby-boomer generation, born between 1947 and 1949 and with a high rate of homeownership, reaches age 75 or older.

There are various reasons why vacant houses are left untouched in Japan. Some owners are reluctant to demolish or part with homes that are filled with memories. Others don't want the properties of deceased relatives because of the expenses and hassles of renovations and maintenance. And vacant homes that are put on the market are often ignored by Japanese, who generally seek newer homes to buy.

However, *Akiya and Inaka*, a Tokyo-based company that introduces vacant houses to overseas buyers, says it receives several hundred inquiries every month. Many of the interested parties have never set foot in Japan and have no family members nor acquaintances here, the company said. When asked about their preferences, the would-be buyers often respond: “Near the ocean or mountains” and “Older is better.” Parker

Allen, 34, who heads *Akiya and Inaka* and hails from the U.S. state of Tennessee, said, “From an overseas perspective, there is absolutely no negative perception of vacant houses.”

Wormann said vacant houses should not be viewed as a problem but as a possibility. “I think Japan lacks the positivity, ⁽²⁾the willingness to view things in a positive light,” he said. The Swede made the most out of the “possibility” he was given. Accordingly, he bought the 86-year-old house three years ago. The elderly resident of the home died about 10 years ago and passed it down to relatives, who left it as it was. The house has a floor space of roughly 90 square meters and is conveniently located just a 10-minute walk from a train station where several lines stop.

Wormann, a fashion model who has traveled across Europe, the United States and Asia, naturally believed that buying a home in a major foreign city would be expensive. But after coming to Japan and learning about akiya, he purchased the home in ⁽³⁾one of the most desirable locations in Tokyo for about 10 million yen (\$69,000).

He grew up watching his parents change the layout and design of their 120-year-old wooden house in Sweden. Using memories of that time, Wormann began his renovation work in Tokyo by replacing the flooring and knocking down the walls and stairs. This phase in the do-it-yourself project took a year to complete.

But he also wanted to preserve ⁽⁴⁾the original charm of the house. He retained the rattling front door and a door chime from the Showa Era (1926-1989). He also left a “tokonoma” (alcove) in the traditional Japanese-style room and the pink tiles in the bathroom as they were. “Eighty-six years of history cannot be recreated,” Wormann said. The house now has a Nordic-style dining-kitchen area with a two-story ceiling (C). He often uses his home to entertain friends on weekends.

Wormann has been receiving inquiries from people who have heard about his renovation work. Another house in Wormann’s neighborhood remains unoccupied since its elderly owner who lived there alone died several years ago. The man’s son and his family, who live in Tokyo, have visited the house on weekends to sort through belongings and mow the grass. They have also discussed potential uses of the property with the

local government. The son checked out Wormann's renovated home and was astonished. "We would have never thought about renovating the house. But this one became reborn in the hands of a foreigner (D)," the son said.

(Adapted from Otahara, N. (2024, January 25). *Overseas Interest Rises for Japan's Abundance of Vacant Homes*. The Asahi Shimbun. <https://www.asahi.com/ajw/articles/15112746>)

- (注) dresser-drawer : 化粧だんす the Building Standards Law : 建築基準法
an internal affairs ministry survey : 総務省の調査
surge : 急上昇する demolish : 取り壊す
part with : ～と別れる hassles : 面倒なこと
hail from : ～出身である Nordic-style : 北欧風の
sort through : 整理する mow the grass : 芝生を刈る

設 問

1. 下線部(1)「建築基準法」で、狭い通りに面した建物の取り壊しや建て直しが禁じられている理由は何か、日本語で説明しなさい。

2. 空所(a)に入る最も適切な単語を次の選択肢から一つ選び、記号で答えなさい。

(ア) rejecting (イ) resolving (ウ) selling (エ) worsening

3. 下線部(2)の意味に最も近いものを、次の選択肢から一つ選び、記号で答えなさい。

(ア) To solve a problem immediately and find a possible answer.

(イ) To put something in a well-lit place and examine it closely.

(ウ) To find positive value in a thing which people think is useless.

(エ) To consider the possibility of buying a house with the positive intention to live there.

4. 下線部(3)について、購入した物件の立地条件が好ましいと思われる理由を日本語で答えなさい。

5. 下線部(4) “the original charm of the house” を保つために、Anton Wormann さんが改修した家屋に残したものは何か、四点を日本語で答えなさい。

6. 日本で空き家が放置される理由を三点に分けて日本語で簡潔に答えなさい。

7. 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。

as if time had stopped since the last resident left

8. 最後の段落の内容として最も当てはまるものを次の選択肢から一つ選び、記号で答えなさい。

- (ア) After Wormann introduced his idea for vacant houses in Japan, one person found a house in Wormann's neighborhood that was a nice place to renovate.
- (イ) Wormann found another house in his neighborhood and had its owner collect belongings and mow the grass on weekends in preparation for its sale.
- (ウ) The owner of a house died, and the owner's son and his family asked the local government to introduce them to a foreign renovator like Wormann.
- (エ) A man had trouble managing the house that he inherited from his deceased father, but he found that renovation such as Wormann's was a good idea.

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) () students have to submit their homework by the deadline.

(ア) All

(イ) Each

(ウ) Every

(エ) Another

(2) The meeting scheduled () 20 March will be held in the headmaster's office.

(ア) at

(イ) in

(ウ) to

(エ) for

(3) He () out that the essay his colleague had written had a serious error.

(ア) canceled

(イ) pointed

(ウ) conducted

(エ) corrected

(4) We shouldn't expect that disasters like heavy rain and typhoons will cease to happen, () should we forget our emergency plans.

(ア) so

(イ) nor

(ウ) never

(エ) either

(5) By next year, they () in this house for ten years.

(ア) will live

(イ) would live

(ウ) will be living

(エ) will have been living

(6) The book () she lent me was fascinating.

(ア) what

(イ) who

(ウ) which

(エ) where

(7) Rarely () such a beautiful view.

(ア) have I seen

(イ) haven't I seen

(ウ) I have seen

(エ) I haven't seen

(8) The university office will () ask students to update their personal contact information.

(ア) previously

(イ) recently

(ウ) sometimes

(エ) lately

(9) He works out every day () he can stay healthy.

(ア) so that

(イ) due to

(ウ) in order to

(エ) as a result of

(10) Bamboo can easily be () into many products.

(ア) translated

(イ) transformed

(ウ) transmitted

(エ) transcended

4 二人の学生 Haru と Yuki が話をしています。対話の下線部(1)～(4)の日本語を英語に直しなさい。

Haru: Hey, Yuki. Do you think it's a good idea to take on a part-time job while being a full-time student?

Yuki: It really depends, Haru. 例えば、アルバイトをすることで貴重な仕事の経験ができるよ。
(1)

Haru: That's true, but don't you think it can be very stressful and take up too much time, potentially hurting your grades?

Yuki: Yes, 仕事と学校を両立することは大変だよ。 This is especially true during
(2) midterms and finals when there is a lot to study.

Haru: I guess it also matters what kind of job it is and how flexible the working hours are in relation to your class schedule.

Yuki: Absolutely. 学生がやりやすいアルバイトもあるよ because they don't interfere
(3) with your study schedule.

Haru: Have you ever had a part-time job while you were studying?

Yuki: Yes, I did last semester. It was tough at times, but 上手な時間の使い方ややるべきことへの優先順位の付け方を学んだよ。
(4)

試験問題は次に続く。

5 次の英文は『タイム』誌に掲載された宇宙飛行士フランク・ルビオ氏へのインタビュー記事です。これを読んで、設問に答えなさい。

A Year in Space

Astronaut Frank Rubio accidentally spent a record-breaking length of time in space. On September 27, 2023, Frank Rubio broke the record for the longest U.S. spaceflight. When he got back, he ate a salad. “What most of us really want when we get back is fresh food,” he told TIME. That’s what he wanted when at the International Space Station. Rubio’s record-breaking mission wasn’t planned. It was supposed to be 180 days long, but instead it lasted 371 days. Leaking coolant on the spacecraft that was supposed to bring him home delayed his return. Nearly four months after coming back to Earth, Rubio talks about his time in space.

Interviewer:

Rubio: We conduct a lot of experiments in space. I think there were more than 300 experiments that our crew was a part of while I was there. Also, we have to put in a lot of effort toward maintaining our bodies. I enjoy exercise and exercising also helps with my psychological health. And we spend quite a lot of time performing maintenance on the space station. Every once in a while, we get to do some really exciting things, such as a spacewalk. ⁽¹⁾ Every day is incredibly busy.

Interviewer:

Rubio: Astronauts adapt quickly to being in space. In contrast, the readaptation process back to Earth can be more difficult. Gravity has a stronger effect on the body. It takes two to three months to get back to the physical condition we had preflight. Right now, I feel like I’m back to 90 to 95% of my normal condition.

Interviewer:

Rubio: (A), the biggest challenge is being away from family. But we’re able to call Earth anytime we want. And at least once or twice a week, we can do a video conference. Those really helped in my case.

Interviewer: d

Rubio: That's a difficult question. The launch was fantastic. Then we got to space and I saw the Earth for the first time. Then I did a spacewalk. The engineering that goes into keeping people alive in a small space suit is incredible. The fact that we're able to live in space for a full year is mind-blowing. Then, at the end of it, we became a meteorite as we reentered the Earth's atmosphere. The fact that scientists are able to get that exactly right is amazing. So, I'd say the whole year was full of once-in-a-lifetime experiences.

Interviewer: e

Rubio: I definitely want to go back. I don't know if I'd want to break the record again. But I hope to continue to be a part of the human spaceflight program. What we do for the benefit of humanity is incredible. I would like to go back, but if I cannot, hopefully I can help get somebody else back to the moon, and then onward from there to other planets.

International Space Station

The International Space Station, or ISS, is a football-field-size platform. It orbits Earth from nearly 250 miles away. It has been in orbit for 25 years. More than 270 astronauts from different countries have visited it. While aboard the ISS, crew members conduct and check the progress of science experiments. These experiments might one day help us travel farther into space, for longer periods of time.

(Adapted from Burga, S. (2024, February 29) *A Year in Space*. Time for Kids.

Retrieved from <https://www.timeforkids.com/g34/year-in-space-g3/?rl=en-630>)

(注)	leak : 漏れる	coolant : 冷却液	spacecraft : 宇宙船
	gravity : 重力	mind-blowing : 刺激的な	meteorite : 隕石

設 問

1. 空所 から に入る最も適切な質問を次の選択肢から一つずつ選び、記号で答えなさい。ただし、当てはまらない選択肢が一つある。

- (ア) Are you interested in going back?
- (イ) What has readjusting to life on Earth been like?
- (ウ) What does a typical day look like in space?
- (エ) How did you become an astronaut?
- (オ) What was your most memorable moment?
- (カ) Was it hard to be away from family for so long?

2. 下線部(1)を別の表現で言い換えるときに、最も適切な語句を次の選択肢から一つ選び、記号で答えなさい。

- (ア) Not at all (イ) Occasionally (ウ) Often (エ) All the time

3. 空所(A)に入る最も適切な語句を、以下の選択肢から一つ選び、記号で答えなさい。

- (ア) Above all (イ) Also (ウ) By the way (エ) However

4. 次の(ア)～(オ)について、本文の内容に合致するものには T (True) を、そうでないものには F (False) を選び、解答用紙の T, F のいずれかを丸で囲みなさい。

- (ア) Rubio had planned to spend more than a year in space.
- (イ) Rubio will be sad if he doesn't go to the moon next.
- (ウ) Rubio got used to life back on Earth in several months.
- (エ) Rubio definitely wants to break his record again.
- (オ) The ISS is an exclusively American space station.

5. インタビューの内容に照らして, because 以下につづくものとして, 最も適切な文を次の選択肢から一つ選び, 記号で答えなさい。

Right after Rubio came back to earth, he had a salad because _____

- (ア) he wanted to eat the vegetables they had grown on the ISS.
- (イ) his long stay in space had radically changed his food preferences.
- (ウ) it was very hard to get any fresh food out in space.
- (エ) the project itself was sponsored by the United States Department of Agriculture.
- (オ) he is now interested in farming.

