

[I] 次の英文を読んで設問に答えなさい。

In February 2013, a large asteroid ripped through the atmosphere over the Chelyabinsk area of Russia, trailing long lines of smoke as it made its shallow entry, radiating so much light and heat that onlookers (A) reddened faces and peeling skin. When the meteor exploded, 15 miles up, there was a terrible, prolonged bang—a noise that (B), in a sense, ever since. We now know that the explosion over Chelyabinsk (C) with a force equal to 500 kilotons of TNT*, or (ア) Nagasaki bombs. Had the meteor come down a little steeper (イ), directing the might of its detonation* at, rather than over, Chelyabinsk, it (D) thousands on the ground. Although nobody died at Chelyabinsk, it was an event of such calamitous* potential that the asteroid (E) by certain astronomers as a “city-killer.” Many are now wondering if we’re not being a little complacent*.

In November 2013, a trio of studies (F) in the journals *Nature* and *Science* suggested that impacts of Chelyabinsk’s magnitude were (ウ) more likely to happen than previously supposed. In December, the UN called for the creation of an international asteroid warning network. In the New Year, it took only hours for the first major rock of 2014 to arrive: a car-sized lump that burst (エ) over the Atlantic on January 1.

To recap: asteroids are hunks* of space rock that whisk* around the solar system in orbits around the Sun, colliding with anything that crosses their path. If they enter the Earth’s atmosphere, we call them meteors; anything that hits the ground is called a meteorite. Most asteroids are small and burn up in our atmosphere; some are (オ) to matter, such as the Chelyabinsk rock, which was (カ) a swimming pool: 20 meters from end to end. For some time, NASA (G) giant asteroids (those at least 1 kilometer wide), but it has never seemed particularly (キ) lesser rocks—those that could only destroy, (ク), a city.

But at a press conference earlier this year, former NASA astronaut Dr Edward Lu announced that there are around one million asteroids in the Earth’s vicinity* “with the (ケ) destroy a major metropolitan area.” He showed an animated graphic to demonstrate how (H). The graphic showed the Earth in orbit among the dangerous asteroids we knew about and were tracking—around 10,000 of them. (I) like this, our planet looked like a pedestrian walking along a busy street, not overly troubled. Then Lu changed the graphic to show “what it really looks like out there” with the Earth (J) through a million-strong field of city-killing asteroids. I saw the same pedestrian now trying to run through a train station in the middle of rush hour, avoiding collisions purely (コ). “Blind luck,” as Lu put it.

設問

問1 本文中の(A)～(J)に入れるのに最もふさわしい語句を選び、その番号を解答欄に記しなさい。

- (A) 1 are left with 2 had left with 3 have left with 4 were left with
(B) 1 had rung on 2 has rung on 3 rang on 4 rings on
(C) 1 had occurred 2 has occurred 3 occurred 4 occurs
(D) 1 had killed 2 has killed 3 would have killed 4 would kill
(E) 1 classified 2 classifies 3 has classified 4 was classified
(F) 1 published 2 publishing 3 was published 4 were published
(G) 1 has been tracking 2 is tracking 3 tracks 4 was tracking
(H) 1 much unprepared we are 2 much we are unprepared
 3 unprepared we are 4 we are unprepared
(I) 1 Saw 2 See 3 Seeing 4 Seen
(J) 1 having shot 2 shooting 3 shoots 4 shot

問2 本文中の(ア)～(コ)に入れるのに最もふさわしい語句を選び、その番号を解答欄に記しなさい。

- (ア) 1 a couple dozens 2 a couple of dozen 3 a dozen of 4 dozen of
(イ) 1 February 2 in that February 3 on that February
 4 that February
(ウ) 1 between three and ten times 2 between three to ten times
 3 from three and ten times 4 three and ten times
(エ) 1 above 2 apart 3 in 4 out
(オ) 1 big enough 2 enough big 3 enough small 4 small enough
(カ) 1 as size as 2 size as 3 size of 4 the size of
(キ) 1 concerned about 2 concerned with 3 content about
 4 content with
(ク) 1 as we know 2 example 3 it is said 4 say
(ケ) 1 possibility of 2 possibility to 3 potential of 4 potential to
(コ) 1 at random 2 at will 3 by chance 4 by mistake

[Ⅱ] 以下の文章は、“Can Solar Energy Save the World?”というテーマのディベートに関するものである。司会者のGeoff Carrが対立する二者—Richard SwansonとBenny Peiser—の意見を踏まえて行った発言である。英文を読んで、設問に答えなさい。

Sunlight is free. Turning it into electricity produces no greenhouse gases, and the process is getting cheaper every year. These facts suggest solar power

ought soon to be a big part of the world's energy mix. However, it is unavailable at night and is most efficiently generated in deserts—places where few potential consumers live and which are often (at least in the case of those near Europe) in countries with dubious governments. Can these problems be (ア)? ⁽¹⁾Or is solar power forever destined to be something for which fossil-fuel-based economies half-heartedly provide financial support just to make themselves seem more environmentally friendly than they really are?

As Richard Swanson observes, this debate depends on whether the world needs saving and, if so, from what? There are two conventional answers to the second question. One is that it needs saving from the effects of climate change (イ) by man-made global warming. The other is that it needs saving from dependence on fossil fuels, which are, by definition, a finite* resource.

Both of these answers are challengeable. Few informed people doubt that humanity's emissions of greenhouse gases, particularly carbon dioxide, are altering the climate. (A) there is doubt over both how big that effect will be and whether the response should be to try to stop the change or to adapt to it. Trying to stop it would certainly require a vigorous approach to alternative energy, (B) solar power would play an important—and probably eventually dominant—role. Trying to adapt would mean business as usual, with access to the cheapest energy sources (i.e., fossil fuels, at the moment) to help bring about the economic (ウ) that would help pay for adaptation to an altered climate.

Similarly, as the rise of fracking* has shown, previously inaccessible sources of fossil fuels can be made accessible by technological (エ). And (C) more untapped resources are known to exist even now, such as methane trapped at the bottom of the sea in icy structures called clathrates. With such abundance, why invest in solar power?

Demand for energy is growing fast—doubling every 40 years. This means that unless something changes drastically, ⁽²⁾人間はこれまでに使ったのと同じくらいの量のエネルギーを次の40年間にわたって使うだろう。 Some of those who see this (オ) in disaster for Homo sapiens suggest anticipating the problem by perfecting solar technologies now—even though they are not sustainable without financial support—so that they can be deployed rapidly when needed.

Intriguingly, both Richard Swanson and Benny Peiser have considered the case of Germany, but they have managed to draw opposite conclusions in doing so. Mr. Swanson notes that renewables* supply a quarter of Germany's

electricity needs, that solar alone supplies 5% (and on sunny summer days up to 40%), and that a third of the world's solar cells are installed there. Clearly, in his view, those cells are a force for good. Mr. Peiser, (D), points out that Germany has the second most expensive electricity in Europe, that its subsidization of green energy comes to €20 billion (\$28 billion) a year, and that during the winter it has to import power from its neighbours. In his view, the country is at serious risk of suffering blackouts.

One reason for the imports is obviously that Germany is not a particularly sunny place, especially in winter. But countries farther south (E). With a suitable intercontinental power grid, it would be possible for northern European countries to switch to solar energy by importing it, (F) by generating it themselves. For Europe, that would create other problems, since many of the sunniest nearby countries have unfriendly governments of questionable stability. But places such as America, which have sunny deserts within their territories, might find moving solar energy around in this way more achievable.

This leads to another possibility, which is that the world does not actually need solar power to save it but will get it anyway—simply because it will prove better than the alternatives. This argument depends on the fact that sunlight is free. The running costs of at least the simplest sort of solar power station are thus minimal. ⁽³⁾Get the capital costs of such technology low enough and solve the problem of overnight storage, and market economics will do the rest.

The question of the future of solar energy is thus rich with possibilities and constitutes a fascinating subject for debate.

設問

問1 本文中の(ア)～(オ)に入れるのにふさわしい単語になるように解答欄の綴りを完成させなさい。(活字体を使うこと)それぞれの単語についての説明を以下に示すので手掛かりにいなさい。

(ア) dealt with successfully, solved

(イ) brought about

(ウ) an increase in the size, amount or degree of something

(エ) advance

(オ) resulting

問2 下線部分(1)を日本語に訳しなさい。

問3 本文中の (A) ~ (F) に入れるのにふさわしい語句を選択肢から選び、解答欄にその記号を記しなさい。

- | | | | |
|-------------------|-------------------|---------------|--------------|
| (A) 1 And | 2 But | 3 For | 4 So |
| (B) 1 at which | 2 in which | 3 that | 4 which |
| (C) 1 already | 2 any | 3 much | 4 yet |
| (D) 1 by contrast | 2 on the contrary | 3 similarly | 4 likewise |
| (E) 1 are | 2 aren't | 3 do | 4 don't |
| (F) 1 better than | 2 other than | 3 rather than | 4 worse than |

問4 下線部分 (2) の日本語を英語に訳しなさい。

問5 下線部分 (3) を日本語に訳しなさい。

問6 Which of the following is not cited in the passage as a problem associated with solar energy?

- (A) Europe would have to rely on countries with unstable governments for imports of solar energy.
- (B) It is hard to justify the investment that would have to be made to switch to solar power when new sources of fossil fuels are becoming more readily available.
- (C) Countries that do not have sunny climates cannot generate enough solar energy to meet their needs.
- (D) Solar energy alone will not be able to satisfy all of humanity's energy needs.

問7 Which of the following statements is not supported in the passage?

- (A) Switching to solar power would cost more than sticking with fossil fuels, yet it is becoming less and less expensive to produce electricity from sunlight.
- (B) Some people think it would be better to adapt to climate change than to try to reverse it.
- (C) Germany is the biggest user of alternative energy in Europe.
- (D) America would be more likely to have a stable supply of solar energy than Europe.

[Ⅲ] Read the passage below and answer the questions that follow it.

Until a few decades ago, there were no beavers in Patagonia. That changed when 20 pairs of the tree-chewing creature were introduced (あ)

the hope of creating a fur industry. ⁽¹⁾Today, their numbers have exploded, and they pose a serious threat to the biodiversity of this area of South America.

In North America and Europe, beavers live in balance (い) their natural habitat. But in Patagonia, they don't have any natural predators* such as bears or wolves, and the native trees don't regenerate fast enough to keep pace with the animals' destructive powers. (う) the trees they cut down, beavers build dams up to three meters tall. These structures drastically alter waterways, often leading to flooding upstream and droughts downstream.

Within a few years (え) their arrival on the southern tip of Patagonia, beavers had spread (お) the region. Their advance has been so swift that today they are a menace* that is proving hard to control. Argentina and Chile have authorized the hunting of beavers, but this has not stopped the animals. The two countries are now determined to completely eradicate the tree-chewers, said Adrian Schiavini, a beaver specialist from a regional research center.

According to specialists, invasive species are one of the most serious challenges facing our planet, right up there with pollution and climate change. In fact, these challenges are often interconnected. According to Victor Carrion, the administrator of the Galapagos National Park in Ecuador, ⁽²⁾climate change is making certain animals extremely vulnerable to the effects of invasive species.

Species have always moved: the wind carries seeds, and animals swim and fly. But not all are capable (か) crossing the Atlantic or the Andes unaided. ⁽³⁾In ways planned or unforeseen, humans have introduced new species to various regions, and the newcomers often quickly threaten the native plants and animals of their adopted homes. Invasive species travel in ships, in clothes and shoes, or even in people's stomachs. When they get to a new environment, a lack of natural predators often allows them to proliferate*. As they spread, they can gradually alter whole ecosystems, disrupting the natural diets of local species. In the worst cases, (①). "When we lose biodiversity, we lose a bank of genetic material that we need for food or to create medicines," said Fernando Baeriswyl, a project coordinator for the Global Environment Fund who specializes (き) invasive species in Chile.

Just the seemingly innocent act of taking a plant you like home (く) an overseas holiday and planting it in your garden can result in an ecological disaster. Take blackberry bushes, for example. When they arrive in a new environment, ⁽⁴⁾それらは木々の下の土壌に侵入し、水を奪い、他の植物の成長を妨げる。 Even rabbits, dogs, and goats can create serious problems. Many

people think they are native to the areas where they are found, (②).

The University of Chile recently carried out a study showing that the Andean country has as many as 119 exotic invasive species, 27 of which are threatening biodiversity, including the European wasp, an invasive slime called “rock snot,” red deer, and wild boar, among others. To address the general lack of knowledge about this problem and to try to coordinate a response to it, invasive-species experts got together last month in the Huilo Huilo reserve in southern Chile for the country’s first national meeting focused (け) species in protected areas. But ultimately, this is an issue that needs to be tackled (こ) the global level.

Questions

- 1 On the answer sheet, provide a suitable preposition to fill each of the blank spaces marked (あ) to (こ).
- 2 Translate the underlined sentence marked (1) into Japanese, making it clear in your translation what “they” are.
- 3 Translate the underlined sentence marked (2) into Japanese.
- 4 Translate the underlined sentence marked (3) into Japanese.
- 5 Translate the underlined sentence marked (4) into English.
- 6 Which of the following would fit most appropriately into the blank space marked ① ?
 - (A) invaders can be completely wiped out by native species
 - (B) invaders can wipe out entire native species
 - (C) natural predators can be eradicated by invasive species
 - (D) natural predators can eradicate invasive species
- 7 Which of the following would fit most appropriately into the blank space marked ② ?
 - (A) but there are actually few places they would have reached with the help of humans
 - (B) but there are actually few places they wouldn’t have reached without the help of humans
 - (C) but there are actually many places they would have reached with human intervention

(D) but there are actually many places they would never have reached without human intervention

8 According to the passage, are the following statements true or false? On the answer sheet, indicate those you consider to be true with an A, and those you think are false with a B. If you think it is impossible to tell from the passage whether a particular statement is true or false, indicate this with a C.

- (1) Forty beavers were taken to Patagonia several decades ago for commercial purposes.
- (2) Beavers are just as much of a problem in North America and Europe as they are in Patagonia.
- (3) Argentina and Chile have implemented measures that will wipe out beavers in the region.
- (4) Invasive species are less of a global problem than pollution and climate change.
- (5) People can carry invasive species from one country to another without realizing it.
- (6) One factor that can prevent species from establishing themselves in new homes is unfavorable environmental conditions.

[IV] It is said there are things that money cannot buy, but if you could buy absolutely anything, what would it be? Write 80 to 100 words in English, making sure you provide reasons to support your answer.

[NOTES]

calamitous creating great damage
complacent not worried about a situation, even though the situation may be dangerous
detonation a large explosion
finite having an end or limit
fracking the process of extracting oil or gas from rocks
hunk a large piece of something
menace something that is dangerous, a threat
predator an animal that kills and eats other animals
proliferate increase rapidly in number
renewables sources of energy that do not run out
TNT a powerful explosive substance (trinitrotoluene)
vicinity the area near a particular place
whisk move quickly

Adapted from *Oxford Advanced Learner's Dictionary* (8th ed.), *Oxford Dictionary of English* (2nd ed. rev.), *Longman Dictionary of Contemporary English* (5th ed.), etc.

[出典] 以下の資料に基づく

[Ⅰ] “The ‘city-killers’ heading for Earth.” *The Week UK* Oct. 25, 2014.

[Ⅱ] “Can Solar Energy Save the World?” *The Economist* Oct. 29, 2013.

[Ⅲ] “Invasive species threaten global biodiversity.” *The Japan Times* Nov. 6, 2014.