〔1〕 次の英文を読み，設問に答えなさい。(43点)

In biology, we call a species (1)dominant when it obtains more living space at other species' expense, thus showing more adaptability to the environment than its competitors and a superior capacity to solve the problems faced by each living being in the struggle for survival. The more abundant a species is, the greater its relative weight within the ecosystem.

For instance, what would we say if we discovered that a faraway planet is 99 percent inhabited by a certain life form? We'd say the planet is dominated by that life form. Now let's come back to Earth. What do we say about our planet? That it is dominated by humans. Now, are we really sure that this thought, so reassuring in many ways, corresponds to reality? On Earth, 99.7 percent of the biomass, or the total mass of everything that is alive, isn't composed of humans, but of plants! The human species, together with all the other animals, represents a mere 0.3 percent.

Given (2)this state of things, our planet is certainly green; Earth is an ecosystem unmistakably dominated by plants. But how can that be? How could the stupidest and most passive beings on the planet have achieved this primacy? Obtaining greater space at the expense of other species indicates greater adaptability, that is, superior problem-solving ability. So why, of all living things, do animals make up only 0.3 percent, and why, of that 0.3 percent, do humans make up an even smaller percentage? Or, putting the question another way, how do we reconcile this fact with the completely human assumption that we are the dominant species, we can control the planet, and we have greater rights than other species? On planet Earth, is there really only 0.3 percent animal life compared to 99.7 percent plant life? Then plants are the dominant beings, while there are only trifling amounts of animals. There can be only one explanation: plants are much more advanced, adaptable, and intelligent beings than we're inclined to think.

Why is the word *intelligence* so disconcerting when used to refer to the plant world? Unlike animals, plants are stationary beings and live anchored to the soil (though not all do). To be able to survive in this condition, they have evolved ways of feeding themselves, reproducing, and defending themselves differently from animals, and they have constructed their bodies modularly* in order to cope with external attacks. Thanks to this structure, if an animal eats part of the leaves or the stem, it isn't a serious problem. A plant doesn't have individual organs such as a brain, a heart, lungs, and one or more stomachs because, if it did, their injury or removal would threaten the entire organism's survival. In plants, no single part is essential; and, in fact, the structure is mostly made up of repeated modules that interact with one another and that in certain conditions can even survive autonomously. (3)These structural characteristics make plants very different from animals and more like a colony than an individual.

One consequence of their having a structure so different from ours is that plants seem very distant from us, alien, to the point that sometimes it's even hard for us to remember they're alive. The fact that we share with most animals a brain, a heart, one or more mouths, lungs, and stomachs makes them seem close and comprehensible. But with plants, it's completely different.

If plants don't have brains, can they not think? (4)The prejudice about plant intelligence comes from just this doubt: how can a certain function be carried out without an organ designed for it? Yet plants eat without a mouth, breathe without lungs. So why doubt that they can think? No one could deny that a plant feeds or breathes, so why is solely the hypothesis that they think persistently rejected?

Note:

modularly*: 容易に組み換えられる細部の集合として

問 1. 下線部(1)“dominant”の意味を，本文の内容に即して日本語で述べなさい。

問 2. 下線部(2)“this state of things”とはどのような状況のことか，日本語で述べなさい。

問 3. 下線部(3)“These structural characteristics”とはどのような特徴のことか，日本語で述べなさい。

問 4. 下線部(4)“The prejudice about plant intelligence”に関して，一般の人が抱く「偏見」はどのようなものであると著者は述べているか，日本語で答えなさい。

問 5. 次のA～Eのうち，本文の内容に合致するものを一つ選び，記号で答えなさい。

A. Earth's dominant species is human beings.

B. Animals avoid eating plants due to their fragile and vulnerable nature.

C. Plants do not have a mouth, but they have a central nervous system.

D. The structure of plants, which is radically different from that of animals, makes some people forget that they are alive.

E. The author of this essay seems to agree with the general view of plant intelligence which is shared by most people.

〔2〕 次の英文を読み，設問に答えなさい。(40点)

Academic research suggests that our days are becoming increasingly jam-packed. An analysis of data by Harvard Business School found that the percentage of employed Americans reporting that they "never had enough time" rose from 70% in 2011 to 80% in 2018. The reasons for the rise in "time poverty" (as social scientists have (ア) it) are numerous and nuanced, but (1)corporate cultures that value busyness are at least partially to blame—and in theory should also be easy to correct. Put simply, busyness, or the state of being busy, has become a status symbol. Research led by Columbia marketing professor Silvia Bellezza shows that people perceive others who are busy—and who use products indicating they are busy (like a Bluetooth* headset for multitasking)—to be important and impressive. In addition, newly published studies led by psychologist Jared Celniker have found that (2)across the United States, France, and South Korea, people consider those who exert high effort to be "morally admirable," regardless of their output. This is a notable change from bygone eras. As the sociologist Jonathan Gershuny notes, "Work, not leisure, is now the signifier of (イ) social status."

But when it comes to corporate life, busyness is not a virtue, and it is long past time that organizations stopped admiring it. Evaluating employees on how busy they are is a terrible way to identify the most creative and productive talent. Yet many firms reward and promote only people who display how "hard" they're working. (3)The effect on companies and their employees is significant. Research indicates that when organizations overload employees, base their incentives primarily on the amount of time they work, and excessively monitor their activities, productivity and efficiency actually drop. (ウ) among employees can increase turnover, at considerable cost to firms' financial performance. Even if employees don't leave, busyness harms profits by reducing staff engagement and increasing absenteeism*. It also impairs

workers' health: A 2021 World Health Organization report showed that overwork can increase the risk of stroke, heart disease, and ultimately death. Conversely, research suggests that reducing working hours to manageable levels can (エ) productivity.

My sense is that managers now are more open to reconsidering the value of busyness than they have been in a long time. A tight labor market that has increased the negotiating power of overworked employees is one factor here, but the pandemic in recent years has changed corporate culture, as time away from offices has led people at all levels to reassess their relationship with their jobs. Last year a social media post about "quiet quitting"—when employees refuse to work beyond their prescribed tasks and hours—spread widely and became the subject of a media frenzy*. Certainly, there is something in the air.

Notes:

Bluetooth*: 近距離の機器同士をワイヤレスでつなぐ通信技術

absenteeism*: (正当な理由のない) 常習的欠勤

frenzy*: 熱狂, 過熱報道

問 1. 下線部(1)を日本語に訳しなさい。

問 2. 下線部(2)を日本語に訳しなさい。

問 3. 下線部(3)の "The effect" に関して，これは何をすることによる影響であるのか，日本語で述べなさい。

問 4. 本文の空所(ア)～(エ)に入る適切な語を次のA～Hの中から一つずつ選び，記号で答えなさい。なお，文頭に来る語もすべて小文字で示している。

A. dominant　B. enhance　C. exhaustion　D. recalled
E. suppress　F. temporary　G. termed　H. urgency

問 5. 次のA～Eのうち，本文の内容に合致するものを一つ選び，記号で答えなさい。

A. In surveys asking Americans about whether they are busier at work these days, the majority said they have more than enough free time.

B. Corporate culture evaluates employees based on how busy they are because this is the most effective way to use the labor force.

C. The pandemic of the past few years altered the attitudes of many employees toward their work.

D. While some managers still support policies that value busyness, most companies now prioritize workers' private lives at the expense of company profits.

E. Recent American corporate trends show how overloaded workers tend to focus better on their work.

〔3〕 次の英文を読み，設問に答えなさい。(47点)

Mars is famous for its dust storms, which tend to form during summertime in the planet's southern hemisphere. Often they can grow to encompass a substantial region of the Red Planet. (1)For example, in January 2022, a dust storm covering nearly twice the area of the United States led to some of NASA's* exploration equipment on Mars having to be powered down until the storm passed.

Planetary scientists have long pondered where the energy to drive these vast storms originates from. Solar heating clearly has something to do with it, given the connection between dust storms and southern summer, but the extreme nature of the storms suggests that it's more complex. Now new research, based primarily on scientific observations by NASA, has found that dust storms are strongly related to the imbalance between the amount of solar energy being absorbed by Mars and the amount of energy it then gives off as heat.

In technical language, this relationship between absorbing and re-radiating heat is referred to as the radiation energy budget. It's different for each planet. (2)The gas giant planets—Jupiter, Saturn, and so on—have a large imbalance because their great distance from the sun means they receive relatively little solar energy, but they re-radiate a lot because they still have substantial amounts of interior heat left over from their formation.

(3)Earth, on the other hand, has a small imbalance of between 0.2% and 0.4%, meaning that the amount of heat that the planet absorbs and the amount that it re-radiates back into space is about the same. This is thanks in part to the ability of our oceans and atmosphere to trap and redistribute heat around the planet.

The prevailing assumption had been that Mars also has a small imbalance, but the new study shows that not to be the case, which can lead to marked

differences between the two hemispheres, particularly during southern summer and northern winter. Furthermore, the imbalance between day and night is even more startling. According to the research, the presence of heat-absorbing dust suspended in the atmosphere during the storm is partly responsible for this imbalance, but the main cause is the lack of large oceans or a thick atmosphere.

"Mars is not a planet that has any kind of real energy storage mechanisms like we have on Earth," said Ellen Creecy, lead author of the new study. "Our large oceans, for example, help to equilibrate* the climate system."

Once upon a time, Mars had oceans and a thicker atmosphere itself, but the oceans dried up over 3 billion years ago and the atmosphere was mostly lost to space. This history implies that the energy imbalance—and the dust storms that the imbalance drives—are a product of climate change on Mars. Hence, Mars may provide a preview of (4)what will happen to Earth, either if growing climate warming continues, or about a billion years in the future when an aging sun will have grown too hot for oceans to exist on our planet.

Notes:

NASA*: National Aeronautics and Space Administration (アメリカ航空宇宙局)

equilibrate*: to approach or attain a state of balance

問 1. 下線部(1)を日本語に訳しなさい。

問 2. 下線部(2)の理由を日本語で述べなさい。

問 3. 下線部(3)が意味すること，および理由を文脈に即して日本語で述べなさい。

問 4. 下線部(4)に関して，本文の主旨を踏まえて，将来地球に起こると推論されることは何か，またそれが起こる条件は何であると述べているか，ともに日本語で答えなさい。

問 5. 次のA～Eのうち，本文の内容に合致しないものを一つ選び，記号で答えなさい。

A. Dust storms on Mars are sometimes so extensive as to cover a large part of the planet.

B. Until recently, many researchers assumed that Mars has a small imbalance between heat absorbed and heat re-radiated into space.

C. Earth's large oceans and thick atmosphere together help to maintain a relatively stable climate system.

D. In the near future, Earth is expected to undergo sudden, radical changes in its radiation energy budget.

E. The radiation energy budget on Mars varies according to both the seasons and time of day.

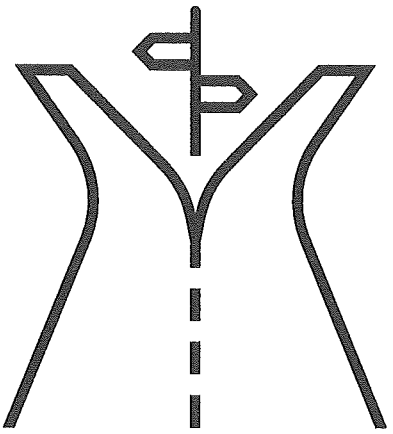
〔 4 〕 Read the instructions below and write your answer **in English**. (40 points)

The population of Japan peaked in 2008 at 128 million people and has been declining ever since. Many government and business leaders are concerned about future social and economic problems caused by this trend. On the other hand, there are also many positive effects, big and small, that will come along with the drop in population.

Describe **in about 100 English words** two positive future changes connected to this trend and how they will affect Japanese society and everyday life for the better.

〔5〕 Read the instructions below and write your answer **in English**. (30 points)

Company A Company B



A Fork In The Road

Imagine you are just about to graduate after four years of study at Kyushu University. You are confident in your academic knowledge and high-level English proficiency. Now you find yourself at a fork in the road, needing to make a big decision about the future.

Your job search has led to two employment offers: Company A, a 600-person Japanese company based in Tokyo, promises health benefits, average pay, and stability. Company B, a 30-person start-up company based in California, offers the same health benefits, but a lower starting salary and less job security than Company A. On the other hand, Company B promises many new and exciting experiences that could never be had in Japan, and if the company grows, it will pay much more than Company A ever could.

Which career path will you choose and why? Explain your choice with at least two different reasons **in about 80 English words**.