

筑波大学 前期

平成25年度 個別学力試験問題

外国語 (英語)

(120分)

- 人文・文化学群 (人文学類, 比較文化学類, 日本語・日本文化学類)
社会・国際学群 (社会学類, 国際総合学類)
人間学群 (教育学類, 心理学類, 障害科学類)
生命環境学群 (生物学類, 生物資源学類, 地球学類)
理工学群 (数学類, 物理学類, 化学類, 応用理工学類,
工学システム学類, 社会工学類)
情報学群 (情報科学類, 情報メディア創成学類,
知識情報・図書館学類)
医学群 (医学類, 看護学類, 医療科学類)

注 意

- 1 問題冊子は1ページから9ページまでである。
- 2 解答は解答用紙の定められた欄に記入すること。

I 次の英文を読んで、下の問いに答えなさい。

Traffic can be a real pain, especially when you are stuck in the middle of it. But it creates problems for us even before we have left the house. In particular, anyone who drives to work or does the school-run is faced with the daily dilemma of “Which route should I take?” Many of us have to deal daily with this dilemma — and many of us try to gain a competitive advantage by making use of our own past experiences and publicly available traffic information. For this⁽¹⁾ reason, these “which route?” problems represent a wonderful example of human complexity in action: a collection of decision-making objects repeatedly competing for limited resources, armed with some kind of information about the past and present — in particular, drivers repeatedly competing to find the least crowded route from A to B, such that they have the shortest possible trip duration.

Let’s suppose that there are no other cars on the road. Then all we would need to do to get from A to B as quickly as possible is to work out which of the available routes represents the shortest distance. Since we would presumably travel at the same speed on every available route, the route which represents the shortest distance will also be the route with the shortest trip duration. Simple.⁽²⁾

The difficulty comes when we add in other cars, and hence other drivers. The more cars there are on a given road, the () the traffic will move in⁽³⁾ general. Even if everyone travels at the speed limit, there are just too many things that could go wrong. People tend to slow down if they sneeze, or change radio stations, or look at something by the side of the road — and gives rise to a chain of events that end up with that awful stop-start traffic that we all know and hate. Worse still,⁽⁴⁾ there might be an accident or some other hold-up that brings everything to a halt.

The complex patterns which arise in traffic systems result from the interactions between the cars — and these interactions between the cars arise from the decisions and actions of their drivers. Drivers tend to make decisions

based on the feedback of information that they are receiving, either through their own personal memories of seemingly similar past experiences or from information about what is going on around them. As a result of this feedback, phenomena such as traffic jams can often appear out of thin air without any obvious cause — just like many financial market crashes also have no apparent cause. This is because traffic systems are constantly shifting between ordered and disordered behavior as time evolves, just like all complex systems.

We know that traffic jams are painful. But suppose you have already committed yourself to being on a particular road — there isn't much that you can do, (), to avoid getting stuck in that jam. Instead, the really important decision-making process actually happened before you took that road: in particular, it was that initial “which route?” question.

All roads can be thought of as having a certain “comfort limit”, in the same way that a potentially overcrowded bar or financial market will have comfort limits of their own. If the number of cars is larger than this comfort limit, the road becomes uncomfortable to be on. There are typically many other people trying to make the same decision about whether to take the same road or not, and we won't know what the correct decision actually is until it is too late. In other words, we all have to make our decisions and hence take the road or not, and then assess afterwards whether it was the correct decision based on how many other people decided to do the same thing.

This dilemma arises, for example, when there are two routes — say route 1 and route 0 — between work and home. Every night we have to decide whether to take route 1 or route 0. Let's assume these two routes 1 and 0 are practically identical. In other words, it would take the same time to get home using either route, in the absence of all other cars. Then clearly we each want to choose the route which is less crowded — in other words, fewer cars. So if there are say 101 of us trying to get home and hence playing the same game, then we would feel we had won if we happened to choose the route with 50 or fewer cars on it. That

would imply that 51 cars had taken the other route, and hence we would have managed to choose the less crowded route. In other words, the worst case that we could possibly experience and yet still be winners would be to have 50 cars on our road including us, and 51 on the other road. Of course there are much better scenarios for us than this — for example, having only 10 cars on our road and () on the other is clearly good. But as long as there is a total of 50 or fewer cars on our road, including us, then there will necessarily be 51 or more on the other one. Hence we will win.

1. 下線部(1)の this reason が指し示す内容を、日本語で説明しなさい。
2. 下線部(2)は、どのような意味で Simple なのか。下の英文がその説明となるよう、空所(ア)(イ)にそれぞれ入る単語を、本文中から抜き出して答えなさい。

The decision-making process is simple because the only factor we need to consider is (ア) in order to find the best (イ) to the destination.

3. 下線部(3)の空所に適切な1語を入れ、文を完成させなさい。
4. 下線部(4)は、何と比較して Worse still なのか。次の中から、最も適切なものを1つ選び、記号で答えなさい。
 - (A) an accident
 - (B) traffic jam
 - (C) the speed limit
 - (D) the difficulty

5. 下線部(5)の空所に入れるべき句として最も適切なものを、次の中から1つ選び、記号で答えなさい。
- (A) on your way home
 - (B) as quickly as possible
 - (C) in terms of decision-making
 - (D) with respect to accidents
6. 下線部(6)の comfort limit とはどのようなことか、日本語で具体的に説明しなさい。
7. 下線部(7)の say の意味として最も適切なものを、次の中から1つ選び、記号で答えなさい。
- (A) tell
 - (B) as far as
 - (C) take
 - (D) for example
8. 下線部(8)を日本語に訳しなさい。
9. 下線部(9)の空所に適切な数字を入れ、文を完成させなさい。
10. 次の中から、本文の内容に合っているものを2つ選び、記号で答えなさい。
- (A) There are a number of variables that make the “which route?” problem difficult to resolve.
 - (B) Traffic jams are invariably attributed to accidents on the road.
 - (C) The traffic system represents a mundane example of complex systems.
 - (D) We can definitely avoid traffic congestion by making use of publicly available information on the radio.
 - (E) Problems such as the one illustrated in the passage are not necessarily ubiquitous in daily life.
 - (F) There is a negative correlation between the difficulty of the “which route?” problem and the number of routes between work and home.

II 次の英文を読んで、下の問いに答えなさい。

(星印(*)の付いた語には本文の後に注があります。)

When all else fails, read the operators' manual.

I routinely board very large airplanes without having the vaguest idea of how they work or how to fly them — I'm a passenger, and happy to ride along. But put me behind the wheel of the car, and I suddenly need to know a whole lot more. Is this car a manual or an automatic? Are mirrors adjusted right? Where is the switch for the headlights? Emergency brake, just in case? When I buy a new car, I actually do read the manual. And when the brakes went out on our car coming down the mountainside during my student days, knowing what to do⁽¹⁾ was a distinct comfort in a tight situation.

I'm educated as a geologist. I have been an academic most of my professional life, but I worked for an oil company for a while and enjoyed both the money and the smart people doing interesting things there. My experience was similar to that of many geologists, who for more than a century have been getting good jobs to help people find valuable things in the Earth (oil, coal, diamonds, gold). Geologists also get jobs to help people avoid hazards (volcano! landslide!), and to be entertaining (dinosaurs!). Recently, however, we have been asked to take on another job.⁽²⁾

I often have taught *geomorphology, the science of why Earth's surface looks the way it does, and the task has been getting harder. More and more, the processes that made Earth's landscape in the past are not the processes that students observe today, because the main processes today are "us."⁽³⁾ We now move more rocks and dirt than nature does — all of the natural landsliding of hillsides and mud washing down rivers and dust blowing through the air are small compared to the work of our bulldozers and steam shovels. Many home gardeners in the suburbs are convinced that they have poor soil, and most of them are right. Digging a hole for a tomato plant then means tapping into a mess of whatever came out to make room for the foundation or basement. A geomorphology student wanting to learn about natural soils may have difficulty,

because most of the easy-to-visit soils have been so greatly disturbed by humans.

A reporter called recently and asked how long it would take Earth to “forget” humanity if we suddenly disappeared. In some sense, we are now⁽⁴⁾ unforgettable — the human-caused plant and animal extinctions have left a hole that will be filled over many millions of years by creatures who will be there because we have wiped out the competition. We have pumped oil and gas out of the ground that had been there for hundreds of millions of years, through holes that may not go away for additional hundreds of millions of years. The human “layer” of plastic and aluminum foil and heavy metals may be recognizable hundreds of millions of years from now.

In Greenland, I helped collect ice cores to learn the history of the atmosphere. The folks who study the trace chemicals in the ice can see the clear signal of mining of lead used to supply the plumbing of the Roman Empire. The post-Roman drop in lead level is followed by a rise beginning with the Industrial Revolution, a drop for *the Great Depression, a huge rise with the use of *leaded gasoline and paint after World War II, and then a great drop when we became concerned about lead poisoning and became serious about cleaning up. The lead will be in the ice for a long time if we don't melt it out, and our lead will persist in the muds of lakes and the sea floor even if we do melt the ice.

With the amount of stuff we use, and the amount of the world we occupy, we are no longer passengers napping in the back seat of the car. We are everywhere, and changing everything. Hence, many environmental scientists are now involved in figuring out what we are doing, how to operate a remarkably complex and involved Earth system, and how to make the ride as enjoyable as possible.⁽⁵⁾ This operators' manual is not finished yet although we know an amazing amount more than we did even a few years ago, with knowledge coming in rapidly. I am proud to have played a small part in this effort. But I'm also concerned that a lot of people, including some of those who are making laws, still think that they are sitting in the back of the car, looking out the window and enjoying the ride.

(注)

geomorphology : 地形学

the Great Depression : 大恐慌

leaded gasoline : 加鉛ガソリン

1. 下線部(1)の理由として最も適切なものを、次の中から1つ選び、記号で答えなさい。

- (A) Drivers need to be prepared for emergencies.
- (B) Knowing the distinctions is essential.
- (C) Manuals can make the ride more comfortable.
- (D) Expert knowledge is rarely required.

2. 下線部(2)の another job が指すものを、次の中から1つ選び、記号で答えなさい。

- (A) protecting Greenland
- (B) teaching geomorphology
- (C) working for an oil company
- (D) preparing an operators' manual for Earth

3. 下線部(3)の指し示す内容として最も適切なものを、次の中から1つ選び、記号で答えなさい。

- (A) Earth's surface has changed dramatically in recent years.
- (B) The changes in Earth's landscape today are caused mostly by humans.
- (C) The way we dominate the environment today is unprecedented in history.
- (D) Earth's landscape is not what it was 30 years ago.

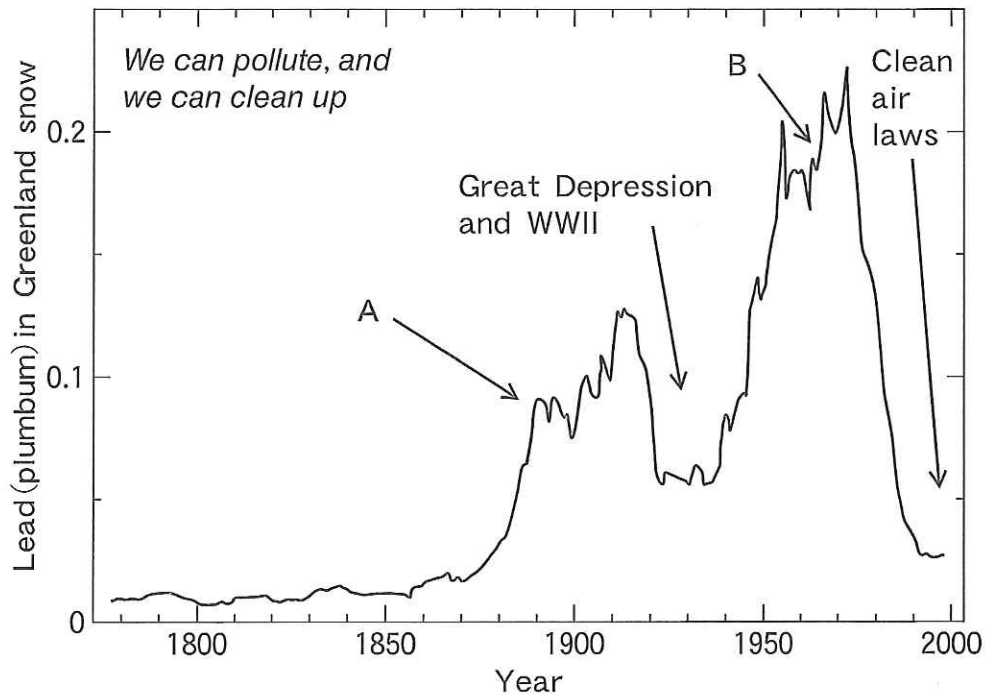
4. 下線部(4)の指し示す内容として最も適切なものを、次の中から1つ選び、記号で答えなさい。

- (A) We cannot forget the way we have damaged Earth.
- (B) We should not forget the way Earth was millions of years ago.
- (C) It is hard to erase the human impact on the environment.
- (D) We cannot afford to overlook environmental issues.

5. 下線部(5)の意味する内容として最も適切なものを、次の中から1つ選び、記号で答えなさい。

- (A) how to make human life safer and more comfortable on Earth
- (B) how to make environmentally-friendly cars easier to operate
- (C) how to build cars that are enjoyable for drivers as well as for passengers
- (D) how to make the operators' manual easier to understand

6. 下のグラフに示したAとBで鉛の含有量が増加している背景を説明している箇所を、本文中からそれぞれ7語以内の英語で抜き出して答えなさい。



7. 本文の主張として最も適切なものを、次の中から1つ選び、記号で答えなさい。

- (A) A good manual is essential for our safety and comfort.
- (B) We need better knowledge of how the Earth system works.
- (C) Geologists, not politicians, are protecting the Earth today.
- (D) Politicians today are aware of the importance of protecting the environment.

Ⅲ 次の〔A〕, 〔B〕に答えなさい。

〔A〕 次の英文が完成した文章になるように、空所に入る語句を(A)から(L)の中から選び、記号で答えなさい。同じ記号を二度使ってはいけません。(ただし文頭に来る場合でも、選択肢では小文字で始めています。)

Advertising has grown to be an industry worth many billions of dollars across the world. (ア) public space has some advertisements in view and all forms of media, from newspapers to the internet, are (イ) filled with advertisements. (ウ) it helps consumers learn what is on offer, it is beneficial. (エ), excessive amounts of advertising can be harmful. It makes people want (オ), or want things they cannot have. (カ), some try to make people feel inferior if they don't have the product. Research shows that children can be (キ) open to risks (ク) these. (ケ), many believe that advertisements can do more harm (コ) good.

- (A) almost all (B) also (C) as long as (D) by comparison
(E) furthermore (F) however (G) on the contrary (H) particularly
(I) such as (J) than (K) therefore (L) too much

〔B〕 下の英文に対する反論を 80 語程度の英語で書きなさい。(句読点は数える必要はありません。)

Cell phones should not be allowed in school for a couple of reasons. First, they are too much of a distraction. When students are in class they need to focus on the subject they are studying, not checking their mail or surfing the Internet. Second, ring tones and vibration noises from cell phones interrupt the class. This irritates the teacher and distracts the students from their studies. In other words, cell phones negatively affect the learning environment.