平成２２年度

１１時２０分～１２時５０分

英　語

問題用紙	１～６頁
解答用紙	１頁

注　意　事　項

１．試験開始の合図［チャイム］があるまで、この注意をよく読むこと。
２．試験開始の合図［チャイム］があるまで、この問題の印刷されている冊子を開かないこと。
３．試験開始の合図［チャイム］の後に問題用紙ならびに解答用紙の定められた位置に受験番号、氏名を記入すること。
４．解答はかならず定められた解答用紙のそれぞれ定められた位置に、問題の指示に従って記入すること。
５．解答はすべて黒鉛筆を用いてはっきりと読みやすく書くこと。
６．質問は文字に不鮮明なものがあるときにかぎり許される。
７．問題に、落丁、乱丁の箇所があるときは手をあげて交換を求めること。
８．試験開始後６０分以内および試験終了前１０分間は、退場を認めない。
９．試験終了の合図［チャイム］があったとき、ただちに筆記用具を置くこと。
１０．試験終了の合図［チャイム］の後は、問題用紙および解答用紙はすべて本表紙を上にして、通路側から解答用紙、問題用紙の順に並べて置くこと。いっさい持ち帰ってはならない。なお、途中退場の場合は、すべて裏返しにして置くこと。
１１．その他、監督者の指示に従うこと。

受験番号		氏　名	

1 次の英文を読み、問題に答えなさい。

What we expect a new biology in the near future is to give us an easy access to cheap and abundant solar energy. A plant is a creature that uses the energy of sunlight to convert water and carbon dioxide and other simple chemicals into roots and leaves and flowers. To live, it needs to collect sunlight. But it uses sunlight with low efficiency. The most efficient crop plants, such as sugarcane or corn, convert about 1 percent of the sunlight that falls onto them into chemical energy. Artificial solar collectors made of silicon can do much better. Silicon solar cells can convert sunlight into electrical energy with 15 percent efficiency, and electrical energy can be converted into chemical energy without much loss. We can imagine that in the future, when we have mastered the art of genetically engineering plants, we may breed new crop plants that have leaves made of silicon, converting sunlight into chemical energy with ten times the efficiency of natural plants. These artificial crop plants would reduce the area of land needed for biomass* production by a factor of ten. (1)They would allow solar energy to be used on a massive scale without taking up too much land. They would look like natural plants except that their leaves would be black, the color of silicon instead of green, the color of chlorophyll. (2)私が問うている問題は、シリコン製の葉の植物を栽培するには、私たちにはどのくらいの時間がかかるのだろうか、ということである。

If the natural evolution of plants had been driven by the need for high efficiency of utilization of sunlight, then the leaves of all plants would have been black. Black leaves would absorb sunlight more efficiently than leaves of any other color. Obviously plant evolution was driven by other needs, and in particular by the need for protection against (3). For a plant growing in a hot climate it is advantageous to reflect as much as possible of the sunlight that is not used for growth. There is plenty of sunlight, and it is not important to use it with maximum efficiency. The plants have evolved with chlorophyll in their leaves to absorb the useful red and blue components of sunlight and to reflect the green. That is why it is reasonable for plants in tropical climates to be green. But this logic does not explain why plants in cold climates where sunlight is scarce are also green. We could imagine that in a place like Iceland, overheating would not be a problem, and plants with black leaves using sunlight more efficiently would have an evolutionary advantage. For some reason that we do not understand, natural plants with black leaves never appeared. Why not? Perhaps we shall not understand why (4)nature did not travel this route until we have traveled it ourselves.

After we have explored this route to the end, when we have created new forests of black-leaved plants that can use sunlight ten times more efficiently than natural plants, we shall be confronted by a new set of environmental problems. Who shall be allowed to grow the

black-leaved plants? What shall we do with the silicon trash that these plants leave behind them? Shall we be able to design a whole ecology of silicon-eating minute living organisms and earthworms to keep the black-leaved plants in balance with the rest of nature and to recycle their silicon? (5)The twenty-first century will bring us powerful new tools of genetic engineering with which to manipulate our farms and forests. With the new tools will come new questions and new responsibilities.

注)

*biomass: the common name for organic materials used as renewable energy sources such as wood, crops, and waste.

〔1〕下線部 (1) を、They の指しているものを明らかにして、日本語に直しなさい。

〔2〕下線部 (2) を英語に直しなさい。

〔3〕(　3　)に入る最も適切な語を、本文中から選び答えなさい。

〔4〕下線部 (4) はどのようなことですか。this の内容を明確にして、日本語で説明しなさい。

〔5〕下線部 (5) を日本語に直しなさい。

〔6〕"black-leaved plants"を栽培する際に生じる問題点について、筆者の考えを60ー100字以内の日本語で答えなさい。

2 次の英文を読み、（　　）に入る最も適切なものを選択肢から選び記号で答えなさい。

City parks were originally created to provide the local people with a convenient refuge from the crowding and chaos of its surroundings. Until quite recently, these parks served their purpose admirably. (①) city residents wanted to sit under a shady tree to think or take a vigorous stroll to get some exercise, they (②) visiting these nearby oases. Filled with trees, shrubs, flowers, meadows, and ponds, city parks were a tranquil spot in which to (③) the daily pressures of urban life. They were places where people met their friends for picnics or sporting events. And they were also places to get some sun and fresh air in the midst of an often dark and gloomy environment, with its seemingly endless rows of steel, glass, and concrete buildings.

For more than a century, the importance of these parks to the quality of life in cities has been recognized by urban planners, yet city parks around the world have been allowed to (④) to an alarming extent in recent decades. In many cases, they have become centers of crime; some city parks are now so dangerous that local residents are afraid even to enter them. And the great natural beauty which was once their hallmark has been severely damaged. Trees, shrubs, flowers, and meadows have withered under the impact of intense air pollution and littering, and ponds have been fouled by (⑤) wastewater.

This process of decline, (⑥), is not inevitable. A few changes can turn the situation around. First, special police units, whose only responsibility would be to patrol city parks, should be created to ensure that they remain safe for those who wish to (⑦) them. Second, more caretakers should be hired to care for the grounds and in particular, to collect trash. Beyond the increased staffing requirements, it will also be necessary to (⑧) city parks from their surroundings. Total isolation is, of course, impossible; but many beneficial measures in that direction could be implemented without too much trouble. Vehicles, for instance, should be banned from city parks to (⑨) air pollution. And wastewater pipes should be rerouted away from park areas to prevent the contamination of land and water. If urban planners are willing to make these changes, city parks can (⑩) to their former glory for the benefit of all.

① (a) As　(b) For　(c) Unless　(d) Whether

② (a) looked back on　(b) looked forward to　(c) looked out for　(d) looked up to

③ (a) break out　(b) come up against　(c) get rid of　(d) go away with

④ (a) deplore　(b) derange　(c) desert　(d) deteriorate

⑤ (a) invisible　(b) degenerated　(c) dissolved　(d) untreated

⑥ (a) although　(b) however　(c) therefore　(d) whatever

⑦ (a) amuse　(b) enjoy　(c) feel　(d) please

⑧ (a) keep (b) locate (c) rebuild (d) separate

⑨ (a) cut down on (b) get out of (c) put out with (d) run out of

⑩ (a) be related (b) be restored (c) remodel (d) recover

3 次の英文を読み、与えられている表を用いて問題に答えなさい。

〔1〕 Six students of foreign languages, Ana, Betsy, Chang, Debby, Edmund, and Fumi, are seated together. They do not all speak the same language, but enough of them speak the same languages that they can translate for each other.

Ana and Debby speak only English, French, and Spanish.
Betsy speaks only English, French, and Japanese.
Chang speaks only Chinese and Spanish.
Edmund speaks only Spanish.
Fumi speaks only Japanese.

name	language(s)

① Which language is spoken by the most students?

(a) English (b) French (c) Chinese (d) Spanish (e) Japanese

② Which of the following students could talk to each other without a translator?

(a) Ana and Fumi (b) Betsy and Chang (c) Betsy and Edmund

(d) Edmund and Fumi (e) Betsy and Fumi

③ Who could act as a translator for a conversation between Betsy and Chang?

I. Ana II. Debby III. Edmund IV. Fumi

(a) I only (b) I and II (c) I, II, and III (d) II, III and IV (e) I, II and IV.

④ If Chang and Fumi wish to talk to each other, what is the fewest number of translators they would need?

(a) 0 (b) 1 (c) 2 (d) 3 (e) 4

〔2〕 A five-floor apartment building has seven vacant apartment rooms—one each on the first, second, and fifth floors and two each on the third and fourth floors. Six people, Ryu, Satomi, Taro, Ume, Yoko, and Wataru, live in the apartments according to the following rules:

Each floor must have at least one occupant.

Ryu must be on a higher floor than Taro.

Exactly two people live above Satomi.

Apartment building

Floor	Vacant Apartment Rooms	
5		
4		
3		
2		
1		

① Who lives on the 3rd floor?

(a) Ryu (b) Satomi (c) Taro (d) Ume (e) Yoko (f) Wataru

② Which of the following statements could be true?

(a) Satomi lives on the fourth floor.

(b) Two people live on the fourth floor.

(c) Taro is the only person on the third floor.

(d) Yoko lives on the fifth floor.

(e) Wataru and Ume live on the same floor.

③ If Yoko and Wataru live above Satomi, then which of the following is a complete list of the people who could live on the second floor?

(a) Ryu, Satomi　　(b) Ryu, Ume, Taro

(c) Ryu, Satomi, Taro　　(d) Satomi, Ume, Taro

(e) Ryu, Satomi, Taro, Ume

上記　問3　［2］　①　について 設問文において Who lives only on the third floor?　と表記すべきところ、 Who lives on the third floor?　と表記しており、正答が導き出せない問題であったことが判明いたしました。 慎重に検討した結果、受験生の不利益にならないよう全受験生を正答として加点処理いたしました。

4　次の①～⑧の状況に対する最も適当な対応をそれぞれ(a)～(k)より選び、記号で答えなさい。ただし、同じものを二度使ってはいけない。

① You and some friends are planning where to go on Saturday evening.

You decide to (　　　)

② Your father says that he feels like cooking right now, and asks you what you would like.

You'll (　　　)

③ You find yourself struggling with an awkward lock on the front door again.

You'll (　　　)

④ The telephone rings when you're sitting down with your family at home.

You'll (　　　)

⑤ You suspect that the house next door is being broken into after hearing a series of mysterious noises.

You'll (　　　)

⑥ You suddenly realize that you've lost a valuable watch which was sent by your grandfather.

You'll (　　　)

⑦ You are feeling rather tired when a friend calls to ask you to go to see a movie.

You'll (　　　)

⑧ After getting back from shopping, you find that the shirt you bought has a hole under the collar.

You'll(　　　)

(a) ask what's in the fridge.

(b) ask what you can do about it.

(c) decide to change it immediately.

(d) explain politely that you've decided to stay in.

(e) go along with whatever the others decide.

(f) hope that it will turn up later.

(g) look for the best one.

(h) ring for the police without hesitation.

(i) spend it without knowing what to do.

(j) take it straight back.

(k) wait to be asked to answer it.

以上