

平成 22 年度大学院工学研究科（博士前期課程）

外国語試験（英語）問題

注 意 事 項

1. 試験開始の指示があるまで、この問題冊子及び別冊の解答用紙は、開かないでください。
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I. Read the following text and answer the questions below.

Last month marked the 19<sup>th</sup> anniversary of the launch of the Hubble Space Telescope, an orbiting observatory that has become a linchpin of astronomical science. The telescope has proved remarkably resilient, enduring numerous glitches over the years—from a flawed primary mirror at deployment to a serious electronic failure this past September. Each time, Hubble has held on until astronauts arrived to perform repairs, an operation that is about to take place for the final time by a shuttle crew.

On Monday space shuttle *Atlantis* is slated to lift off on the fifth and final servicing mission to Hubble (confusingly dubbed Servicing Mission 4 — the nominal third mission was split into two parts, Missions 3A and 3B). Four mission specialists alternating in two-astronaut teams will attempt a total of five spacewalks from *Atlantis* to replace broken components, add new science instruments, and swap out the telescope's six 125-pound (57-kilogram) batteries, original parts that have powered Hubble's night-side operations for nearly two decades.

Which is the best title of the text above?

- A. Stars of the Sky
- B. Last Dance with the Shuttle
- C. The Dramatic Recovery of the Hubble Space Telescope
- D. The Celebration of the 19<sup>th</sup> Anniversary of the Launch of the Shuttle

II. Choose the most appropriate word from A—D to fill in ( 1 )-( 10 ).

Could an early warning system in the Indian Ocean have ( 1 ) tens of thousands of lives lost in the Asian earthquake and tsunamis? Experts say the answer is yes. Scientists and government officials are pushing to have an early warning system built immediately to avoid future tragedies.

Officials say communication in the coastal communities of the Indian Ocean must be improved before an early warning system is built. Many of the villages that were ( 2 ) hardest by the tsunamis do not have modern communication technology, including telephones.

An early warning system is already in ( 3 ) for 26 of the nations, including the U.S., connected by the Pacific Ocean. Officials say that if the same warning system had been set up in the Indian Ocean, many deaths could have been ( 4 ). In the past, the Indian Ocean faced fewer tsunami threats than the Pacific Ocean so the need seemed less ( 5 ).

In the Pacific Ocean, there are more than 150 stations searching for earthquakes and other underwater activity that can create tsunamis. The stations use ( 6 ) to monitor tide activity underwater. If there is an earthquake underwater, scientists use the stations to check for changes in sea levels or water pressure that may cause a tsunami.

If scientists think a tsunami is ( 7 ) the making, they can warn nations that may be ( 8 ). Those nations can then warn their citizens about the tsunami through radio broadcasts or sirens.

Building the system in the Indian Ocean would ( 9 ) 12 months and cost between \$15 and \$20 million, said Phil McFadden, a scientist working with a group that will design the warning system.

Quite soon, world leaders will attend a meeting to discuss the tragedy. The construction of the tsunami warning system is ( 10 ) to be a main focus of the meeting.

- |     |                 |                |               |              |
|-----|-----------------|----------------|---------------|--------------|
| 1.  | A. proved       | B. saved       | C. endangered | D. solved    |
| 2.  | A. hit          | B. joined      | C. reckoned   | D. known     |
| 3.  | A. stead        | B. retrospect  | C. suit       | D. place     |
| 4.  | A. certain      | B. lead        | C. taken      | D. prevented |
| 5.  | A. extinguished | B. urgent      | C. tough      | D. invested  |
| 6.  | A. instruments  | B. knees       | C. knots      | D. spots     |
| 7.  | A. on           | B. in          | C. at         | D. with      |
| 8.  | A. affected     | B. experienced | C. abundant   | D. bound     |
| 9.  | A. point        | B. enclose     | C. take       | D. foresee   |
| 10. | A. avoided      | B. void        | C. withheld   | D. expected  |

III. Choose the most appropriate word from A—D to fill in ( 1 )—( 10 ).

More than 10,000 scientists, environmental activists and government officials from 187 countries met in Bali, Indonesia, to kick off the United Nations Climate Change Conference. It's the largest global warming conference ever ( 1 ).

One of the main goals of the two-week meeting is to develop a replacement for the international treaty called the Kyoto ( 2 ). The Kyoto agreement, which has been signed by 174 countries, called for limits on the release, or emission, of greenhouse gases like carbon dioxide and methane that scientists say are ( 3 ) for global warming.

The United Nations hopes this conference will ( 4 ) to an even stronger global commitment as early as 2009. "We cannot wait," says Rizaldi Boer, an Indonesian climatologist. "We need to do something now." Many experts fear that a warmer planet could ( 4 ) to increased flooding, droughts and major natural disasters as well as the ( 5 ) of thousands of animal and plant species.

Under the Kyoto ( 2 ), nations were legally bound to ( 6 ) greenhouse gases, but since the treaty was signed in 2005, carbon emissions have continued to increase worldwide. Of the largest greenhouse gas emitters, only Russia and Japan have agreed to ( 7 ) the rules of the Kyoto ( 2 ). Poorer developing countries like China and India — which are second and sixth on the list of emitters — are ( 8 ) from making cuts in greenhouse emissions. At least for now.

The United States signed the treaty in 1997, but has not yet agreed to ( 7 ) the strict rules, which requires that greenhouse gas emissions be cut ( 9 ) almost 10% by 2012. U.S. officials are ( 10 ) to these required, or mandatory, cuts in emissions. They worry that cutting emissions that much would be too costly and would hurt the U.S. economy. But they also realize that some action must be taken. "We're not here to be a roadblock," said Harlan L. Watson, a top U.S. climate official. "We're committed to a successful conclusion, and we're going to work very constructively to make that happen."

- |     |               |                |                 |                |
|-----|---------------|----------------|-----------------|----------------|
| 1.  | A. canceled   | B. held        | C. hypothesized | D. submitted   |
| 2.  | A. Protocol   | B. Celebration | C. Law          | D. Anniversary |
| 3.  | A. known      | B. responsible | C. suitable     | D. suited      |
| 4.  | A. work       | B. lead        | C. take         | D. roll        |
| 5.  | A. extinction | B. training    | C. zoning       | D. proof       |
| 6.  | A. deduce     | B. succeed     | C. reduce       | D. surpass     |
| 7.  | A. follow     | B. evolve      | C. screw        | D. exist       |
| 8.  | A. hooked     | B. excused     | C. abound       | D. ground      |
| 9.  | A. toward     | B. in          | C. by           | D. though      |
| 10. | A. opposed    | B. viewed      | C. ideal        | D. chosen      |

IV. Choose the most appropriate sentence from A–E to fill in [ 1 ]–[ 5 ].

Next time, when you think about trying to hide your report card from your mom and dad, you'd better think twice! Your parents probably already know what's on it!

With the click of a mouse, parents in the Minnetonka School District in Minnesota can log on to a website from home or work to view their kids' report cards, grade books and attendance records through an online report card/grading system offered by the school district. Students have access to the website as well, but through a different user name and password, so they cannot change the password and keep their parents out.

[ 1 ]. They thought by introducing online report cards and grading systems, there would be better communication from the school to the parents, so parents would be more knowledgeable about how their children were doing in school. Since the program was started over a year ago, the school has seen improvements in the students' behavior, grades and attendance.

Administrators, teachers and parents in the school district are excited and have found it a useful tool. Dr. Mark Larson, the Principle of Minnetonka Middle School East values the program. He said: "It eliminates surprises. Both students and parents know what they are missing." Sara White, a language art teacher agrees. "I like the fact that the communications are improved between the parents and students and parents can get immediate feedback on how their kids are doing."

[ 2 ]. Some students simply do not want their parents to know so much. Joe Dunn, a seventh grader from Minnetonka Middle School East said: "It backfires. If I don't do well, then my parents can find out and I get punished."

[ 3 ]. Minnetonka School District joins several thousand other districts in the country that offer or are considering offering parents online access to student data.

[ 4 ]. These who favor the programs believe they open up a faster and more efficient channel of communications between the schools and families and provide a great way for parents to keep track of their kids performances. Officials from National Coalition for Parent Involvement in Education (NCPPIE) believe that when parents and families are involved in their children's education, children do better in schools, and schools improve as well.

[ 5 ]. Students and some educators believe posting individual student's data on a website is a violation of privacy. Others are concerned that it may not be available to parents who do not have computers or Internet access. In some schools, teachers struggle to find time to keep the website updated. A group of students also argue that these types of programs are not for learning.

- A. The programs have also caused controversies
- B. Cyber report cards are a growing trend for grades K-12 nationwide
- C. Minnetonka school officials wanted to develop a plan to communicate success and progress to the parents
- D. The programs have received a wide range of support from parents, schools and educational organizations across the country
- E. Students in the district have had mixed reactions

V. Read the following text and answer the questions below.

While there will always be a place for high-quality sunscreen on body parts exposed to the sun, covering up elsewhere — ideally with clothing designed to absorb or shield the sun’s damaging ultraviolet (UV) radiation — can minimize a person’s skin cancer risk significantly.

With recent news about the inadequacy of many sunscreens — the nonprofit Environmental Working Group found that four out of five name brand sunscreens offer inadequate protection from the sun or contain potentially carcinogenic ingredients— covering up instead of smearing is looking better and better to many people. A handful of clothing manufacturers are responding to the increased demand for shirts, pants, dresses and hats bearing “SPF” (sun protection factor) ratings with stylish sun-protective duds.

The granddaddy of them all just might be Sun Precautions Inc., [ X ] after he was diagnosed with skin cancer at age 26. The company’s Solumbra line of sun-protective casual and outdoors clothing blocks upwards of 97 percent of all UVA and UVB radiation it encounters, and is recommended by thousands of dermatologists.

Some hardcore environmentalists shun sun-protective clothing because it is usually made from polyester, Lycra or nylon—[ Y ]. But Marta Phillips of SunGrubbies.com feels that [ ① ] directly onto your skin via sunscreen. That’s why her company sells a wide variety of sun-protective pants, jackets and hats, as well as specialty items such as cover-ups, sun gloves, sun sleeves and nose scarves.

If getting a whole new wardrobe of sun-protective clothing is out of the question, washing your existing clothes with Rit’s SunGuard, [ Z ] through about 20 washings, might be the way to go. Also, sun lovers shouldn’t forget about protecting their eyes. A good pair of 100 percent UV protection sunglasses doesn’t cost an arm and a leg anymore; everyone in your family needs a pair.

1. Change the order of following items to make the best sentence in [ ① ].  
[ A. than B. to smear C. better D. to wear E. chemicals F. the clothes G. it is ]
2. Choose the most appropriate clause or phrase to fill in [ X ] to [ Z ].
  - A. all which are petroleum-derived and are can contain some nasty chemicals
  - B. which was started 15 years ago by avid downhill ski racer and outdoors enthusiast Shaun Hughes
  - C. a product that treats fabric with a compound that imparts 96 percent UV protection
3. What is the main idea of the text?
  - A. Avoiding UVA and UVB carries a person’s skin cancer risk.
  - B. There remains the danger of sun-protective clothing.
  - C. Sun-protective clothing has been improved by a handful clothing manufacturers.
  - D. Everyone should wear a good pair of 100 % UV protection sunglasses.

VI. Read the following text and answer the questions below.

Carbon-neutral [ X ], and how to achieve it has spawned numerous interpretations, too. According to the New Oxford American Dictionary, which made carbon neutral its 2006 “Word of the Year,” it involves “calculating your total climate-damaging carbon emissions, reducing them where possible, and then balancing your remaining emissions, often by purchasing a carbon offset.”

But the term is really so '06. Today's term, “*climate* neutral,” complicates the issue. Tracking carbon is great, but carbon dioxide (CO<sub>2</sub>) is only one of several greenhouse gases that contribute to global warming, says the 2008 publication, *Kick the Habit: A U.N. Guide to Climate Neutrality*, by the United Nations Environment Program. CO<sub>2</sub> makes up some 80 percent of the world's greenhouse gases, but five others—nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulphur hexafluoride and methane—also contribute. Limits on all six gases were called for by the international treaty.

Semantics aside, whether a person can live in a climate-neutral manner is a question of lifestyle choices and making improvements over time. Start your climate neutral quest by calculating your energy usage. Type “climate footprint” or “carbon footprint” into Google and try a couple of calculators that track use in different ways.

For a calculation, you'll need information about your home energy use and your travel by car and public transit. Some calculators ask whether you're vegetarian, how much you recycle and compost, and how much you spend buying goods and dining out. The equation can get involved. Record your information sources, and then revisit the calculator periodically with new numbers to see how you're doing.

The final element involves a carbon offset, “an emission reduction credit from another organization's project that results in less carbon dioxide or other greenhouse gases in the atmosphere than would otherwise occur,” says the David Suzuki Foundation, which promotes “ways for society to live in balance with the natural world.” You can purchase credits from a renewable energy company, for instance, to offset the amount of carbon emissions you can't eliminate through other measures.

Will your efforts make a difference? *Kick the Habit* says that, for individuals, “less than 50 percent are direct emissions (such as driving a car or using a heater).” About 20 percent are caused by the creation, use and disposal of products we use; 25 percent comes from powering workplaces; and 10 percent from maintaining public infrastructure. You can drive your car less and turn down the heat, but consider ways you can affect business and government policies that could tap into that other 50-plus percent.

“We are all part of the solution,” wrote U.N. Secretary-General Ban Ki-moon in the foreword to *Kick the Habit*. “Whether you are an individual, a business, an organization or a government, [ Y ]. It is a message we must all take to heart.”

1. Change the order of following items to make the best sentence in [ X ].  
[A. a term B. has C. is D. many definitions E. that F. sprouted]
  
2. Which of the following is true?
  - A. We should track our carbon footprint via web-based calculators periodically.
  - B. The international climate treaty limits only the emission of carbon dioxide.
  - C. Less than fifty percent are indirect emissions of carbon dioxide.
  - D. There is nothing we can do to minimize our climate footprint.
  
3. Which of the following is **not** stated in the text to have climate-neutral lives?
  - A. To be a vegetarian, recycle, and compost.
  - B. To drive a car less and turn down the heat.
  - C. To promote a renewable energy.
  - D. To consider business and government policies.
  
4. Choose the most appropriate sentence to fill in [ Y ].
  - A. increasing carbon emissions is the most important thing we can do
  - B. there are many steps you can take to reduce your climate footprint
  - C. the international treaty must limit six gases that contribute to global warming
  - D. we should bear in mind that carbon-neutral lives differ from climate neutral lives
  
5. Find the most appropriate word from the text to match the definitions (1)-(3).
  - (1) a consideration or amount that diminishes or balances the effect of an opposite one
  - (2) a mathematical determination of the amount or number of something
  - (3) the action or process of getting rid of something.