

平成16年度名古屋工業大学大学院工学研究科（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。
2. 問題は、1 ページから7 ページまであります。解答用紙は、5 枚あります。ページの脱落等に気が付いたときは、手を挙げて監督者に知らせてください。
3. 監督者の指示に従って、すべての解答用紙の該当欄に必ず志望専攻名及び受験番号を記入してください。
4. 時計のアラーム（時計機能以外の機能を含む。）は使用しないでください。
5. 携帯電話、PHS等は、電源を切って、カバン等に入れてください。
6. 試験終了まで退室できませんので、試験時間中に用がある場合は、手を挙げてください。
7. 試験終了後、この問題冊子は持ち帰ってください。

— 英 語 —

I. ヒトの起源に関する下記の文章を読み、問いに答えよ。

New research shows that early humans lived in Asia much earlier than had been thought. The evidence conflicts with the accepted theory of how humans developed.

Two scientists at the Institute of Human Origins in Berkeley, California, made the discovery. They re-tested the age of a skull found on the Indonesian Island of Java almost sixty years ago. The skull is from a creature known as Homo erectus. Homo erectus is believed to be an ancestor of modern-day humans. Old tests showed that the skull is eight-hundred-thousand years old. The two scientists say the new test shows it is more than two times older, one-million eight-hundred-thousand years old.

The oldest remains of Homo erectus found in Africa are believed to be about the same age. So, the new information may force scientists to change their theory of human development. It had been thought that Homo erectus developed in Africa from a human-like creature about two-million years ago. About five-hundred-thousand years later, the theory says, these early humans developed tools with sharp edges called Acheulean tools. Scientists believed that Homo erectus moved out of Africa into Europe and Asia after the invention of the new tools. Acheulean tools, however, have never been discovered in Asia.

Scientists say the new finding could mean that early humans moved out of Africa much earlier than thought. Or, it could mean that two kinds of Homo erectus developed about the same time. One kind was in Africa. The other was in Asia. If this happened, it would not be clear which one of the two groups was the ancestor of modern-day humans.

The scientists were experts in measuring the age of rocks. They learned the age of the Java skull by testing the rock in which it was found. They measured changes in two forms of the element argon in rock crystal around the skull. This told them the number of years since the crystals formed, and so the age of the skull itself.

- (1) 新しい研究によると、ジャワ原人の年代は従来の推定よりおよそ何万年さかのぼることになるか。日本語で答えよ。
- (2) アシュール期の石器が作られたのは、今からおよそ何万年前と考えられているか。日本語で答えよ。
- (3) 新しい発見によって生じた二つの仮説は何か。それぞれ日本語で25字以内にまとめよ。

II. 宇宙のごみに関する下記の文章を読み、問いに答えよ。

Everything that we send high enough into space will ultimately (①) up as space garbage. And as long as an object is above the earth's atmosphere, it will stay in orbit for thousands or even millions of years. Some day it will hit one of the other millions of objects orbiting the earth and that will create more pieces of space garbage, which could (②) into each other.

After 40 years of sending objects into space, we have seriously polluted the final frontier. Many space paths are (③) with garbage and have become a threat to satellites and astronauts.

Space may seem to be a faraway place, but it is really not that far away. (ア) [you, your, up, earth, car, could, straight, from, drive, If, the], you would be in space in just a few hours. Satellites (④) about 645 kilometers above our heads.

Astronauts and satellites leave space garbage in orbit. Much of it stays there; some is burned up on its way back to earth. What is left falls out of space onto the earth's surface. The big pollution problem, however, is what stays up there. (イ) As more and more garbage collects in much-used orbits around the earth, the risk of a satellite or a spaceship crashing into space garbage increases. If a collision occurs, more space garbage will result, increasing the chances of more collisions.

For many years the National Aeronautics and Space Administration (NASA) and the US Department of Defense didn't believe in the dangers of space garbage because the earth's orbit seemed too large and empty to pollute. But (⑤) with the fact that people could die in space because of collisions with space garbage, they changed their minds.

Space may be the final frontier, but we must realize that for our world it is the beginning, not the end to our environmental problems. We cannot keep dumping our garbage in space without paying a price. (ウ) What that price will be remains a mystery. But it may be better to test these effects through research than wait for the result. The earth's atmosphere controls many aspects of our environment. Apart from the immediate danger to satellites and astronauts, there may be deeper, more challenging problems to solve.

(1) ①～⑤に次の動詞のいずれかを選んで(必要なら正しく活用させて)当てはめよ。各動詞はおのおのの一回のみ用いられる。

crash, face, attend, litter, orbit

(2) 下線部分(ア)の[]の中の語を、下記の日本語の意味になるように並べ替えよ。
「地球からまっすぐ上に向かって、車を運転するとしたら」

(3) 下線部分(イ)を日本語に訳せ。

(4) 下線部分(ウ)の英文を、文意を変えることなく、Weで始まる英文に書き改めよ。

III. 以下の英文を読んで、その答えを書け。答えは数式あるいは、数字で書くこと。

(1)

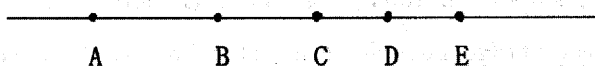
A certain phone call costs 75 cents for the first 3 minutes plus 15 cents for each additional minute. If the call lasts x minutes and x is an integer greater than 3, how much is the cost of the call in dollars? Express your answer with x .

NOTE: 1 dollar = 100 cents

(2)

Five liters of water were poured from tank A into tank B, and ten liters of water were then poured from tank A into tank C. If tank A originally had 10 more liters of water than tank C, how many more liters of water does tank C now have than tank A?

(3)



In the figure above, B is the midpoint of AC and D is the midpoint of CE. $AB = 5$, and $BD = 8$. What is the length of DE?

(4)

If John gives Allen 5 dollars and Allen gives Frank 2 dollars, the 3 boys will have the same amount of money. How much more money does John have than Allen?

(5)

The Factory A produced two-fifths of the Company B's bricks in 2001. If the Factory A produced 1,400 tons of bricks in 2001, what was the Company B's total output that year, in tons?

IV. 以下の英文を読み、質問に答えよ。

A new study may clear away some of the haze hanging over the debate about secondhand tobacco smoke.

Wael Al-Delaimy, a research fellow at the Harvard School of Public Health, and his colleagues analyzed how much environmental smoke people absorb by measuring nicotine levels in the hair of 114 bar and restaurant workers in New Zealand.

Nicotine is a useful tracer of exposure because it gets incorporated into hair after it is absorbed through the lungs. Nonsmokers working in places that allowed unrestricted smoking exhibited nicotine levels nearly as high as those who were moderate smokers.

In restaurants and bars with no-smoking zones, nicotine levels were lower but still comparable to the effect of smoking two cigarettes a day.

Although Al-Delaimy did not perform follow-up medical studies, his data suggest that secondhand exposure in a smoky workplace could pose the same risks as moderate smoking - respiratory problems, lung cancer, and heart disease.

(1) 本文の中で secondhand tobacco smoke と同じ意味合いで使われている句を2つ抜き出せ。

(2) 次の質問に英語で答えよ。

- ① What is Wael Al-Delaimy's job?
- ② Where did he gain the data?
- ③ Why did he decide to measure nicotine levels in the hair?
- ④ What is the disadvantage of Al-Delaimy's study, if there is one?

(3) 本文の内容から判断して、次の文が正しければT、間違っていればFを付けよ。

- ① If you work in a restaurant with no-smoking zones, you have to smoke two cigarettes a day.
- ② Nicotine remains in your hair after it is absorbed through the lungs.
- ③ You are in danger of having respiratory problems if you work in a smoky place.
- ④ Al-Delaimy's study is significant because it suggested how secondhand tobacco smoke affects nonsmokers.

V. あなたはある発明をして、英国で特許を申請しようとしているが、いくつかわからないことがある。英国特許許可局による特許についての文を読み、その疑問に答えているのはどの段落か、適当なものを選べ。なお、(5)の疑問については対応する段落を2つ選べ。(*の付いた語句については、後に注釈があるので参照すること。)

疑問

- (1) What rights does a patent give you?
- (2) How long is a patent effective?
- (3) Can you publicly disclose your invention?
- (4) How do patents benefit anyone other than the inventor?
- (5) Are there any potential pitfalls you should look out for?

[A] A patent gives you the right to stop others from using your invention. Alternatively, you can choose to let others use it under *agreed terms. A patent also brings the right to take legal action against others who might be *infringing the invention and to claim damages. The mere existence of a patent may be enough to deter a potential infringer. The Patent Office, however, does not take sides in any dispute.

[B] The public gain advance knowledge of technological developments which they will eventually be able to use freely once the patent ceases. Society in general benefits from constantly improving and better made products.

[C] You can look upon a patent as a bargain between the State and the inventor. The State offers a short-term monopoly (up to 20 years from filing in the United Kingdom) in return for a full description of the invention, which is published by the Patent Office. This exchange of a monopoly for a full description underpins the patent system and leads to published patent documents being the most comprehensive source of technical information in the world, for practically every area of technology.

[D] An inventor is not required to seek a patent in order to put an invention into practice, but once the invention is made public there will be no protection against others using the invention.

[E] If you are thinking of applying for a patent you should not publicly disclose the invention before you *file an application because this could be counted as prior publication of your invention. Any type of disclosure (whether by word of mouth, demonstration, advertisement or article in a journal), by the applicant or anyone acting for them, could prevent the application from getting a patent. It could also be a reason for having the patent *revoked if one was obtained. It is essential that the applicant only makes any disclosure under conditions of strict confidence.

* agreed term : 同意事項

* infringe : (権利などを) 侵害する

* file an application : 申請書を提出する

* revoke : 無効にする