

平成 29 年度(前期日程)
入学者選抜学力検査問題

英 語

(コミュニケーション英語Ⅰ・コミュニケーション英語Ⅱ・
コミュニケーション英語Ⅲ・英語表現Ⅰ・英語表現Ⅱ)

試験時間 120分

文学部, 教育学部, 法学部, 理学部, 医学部, 工学部

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注 意 事 項

1. 試験開始の合図があるまで, この冊子を開いてはいけません。
2. 各解答紙に志望学部・受験番号を必ず記入しなさい。
なお, 解答紙には, 必要事項以外は記入してはいけません。
3. 解答は, 必ず解答紙の指定された場所に記入しなさい。
4. 試験開始後, この冊子又は解答紙に落丁・乱丁及び印刷の不鮮明な箇所などがあれば, 手を挙げて監督者に知らせなさい。
5. この冊子の白紙と余白部分は, 適宜下書きに使用してもかまいません。
6. 試験終了後, 解答紙は持ち帰ってはいけません。
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※この冊子の中に解答紙が挟み込んであります。

I 次の英文を読んで問1～問5に日本語で答えなさい。

There are many ways to measure loudness, so the loudest animal on Earth may not be what you expect. The blue whale is not the loudest animal on Earth, despite what you may have learned in school. While its calls are claimed to be louder than a jet engine at take-off, registering at an impressive 188 decibels (dB), the sperm whale is actually louder: its communicative clicks have been measured at 230 dB. Looked at side by side, the numbers seem pretty conclusive, but decibels, which measure sound pressure, are not the only way to measure loudness. In fact, loudness depends on the species doing the listening. This means there are many other factors to consider in any discussion of loudness.

From a human-centered perspective, you have to consider that hearing threshold depends on frequency. To understand how humans hear, we first have to understand something about the nature of sound. Hertz (Hz) is a measure of sound frequency. For instance, each note of a musical instrument comes to our ears at a different frequency: the higher the note, the higher the Hz. Humans can hear a wide range of frequencies, from 20 Hz to 20,000 Hz (20 kHz). Many sounds lie within this range, from a blue whale's low-pitched songs to a rat's high-pitched distress calls. But we do not hear all these sounds equally. Instead, our hearing threshold is different for sounds of different frequencies.

Blue whales call at 20 Hz and sperm whales at around 10 kHz. For us to hear blue whale calls, they must be made at an intensity of 70 dB or more. But for sperm whale clicks, the human hearing threshold is around 15 dB. For loud signals, this relationship gets a bit more complicated, but in general it is true that the blue whale will be perceived as less loud than the sperm whale. So the sperm whale is still ahead. Why then is it largely left off lists of the world's loudest animals? The way we hear sound is not only related to its intensity, but also its duration. A sperm whale's click is almost over before it starts. It lasts only 100 microseconds, while blue whale calls last from 10 to 30 seconds.

Whales are not the only rivals for the loudest animals. Pistol shrimps, also known as snapping shrimps, are famous for their intense "screams." They have a special claw that snaps shut with such speed that it creates a bubble with extremely low pressure. This means the bubble quickly bursts as it meets water outside it. When it does, it produces a shock wave measured at 200 dB. The pistol shrimp's shot is extremely short: the bubble is formed and collapses in less than a millisecond. But it is an impressive noise nonetheless for a creature so small. However, when it comes to loudness relative to size, another tiny aquatic animal takes the title. The water boatman can produce 99 dB of sound by rubbing its body parts together. This record raises another important point about loudness. Decibels in water

are not equivalent to decibels in air.

“Water is denser than air, so sound travels through it differently—the speed of sound is different,” says bio-acoustics expert James Windmill. “Roughly, to convert from dB in water to dB in air, you have to subtract around 61 dB from the reported sound level.” People often do not take this into account when doing the comparison. This means that the loudest animal calls would all need to be revised for human perception.⁽⁴⁾

Distance also plays a role in our perception of loudness. Plenty of mammals make long-distance calls. To make sure these signals carry to distant relatives, their roars, rumbles and howls have to be really loud. Elephants make such loud rumbles that they literally make your body vibrate. The sound can be deafening, something like 103 dB measured at five meters. People can hear almost all of the rumbles made by elephants, even the softer ones, as long as they are close enough to the elephant. We just cannot hear the whole sound, as the lowest frequencies are inaudible to us.

All in all, the loudest animal on Earth is harder to pin down than you might have thought. It varies according to which animal is listening, how close it is, and what type of measurement is used. But on decibel levels alone, the sperm whale wins.

注：blue whale シロナガスクジラ；sperm whale マッコウクジラ；
hearing threshold 最小可聴値；pistol shrimp テッポウエビ；
water boatman ミズムシ科の昆虫の総称

- (問 1) 下線部(1)を日本語に直しなさい。
- (問 2) 下線部(2)に対する筆者の答えを説明しなさい。
- (問 3) 下線部(3)を、最初の it の指示内容を明らかにして、日本語に直しなさい。
- (問 4) 下線部(4)の根拠を述べなさい。
- (問 5) 音の大きさを測るものとして筆者が指摘しているものを簡潔に5つ挙げなさい。

II Read the following passage and answer Questions 1–6.

It took ten days, but Brazil's second gold medal of the Olympics—won by pole vaulter Thiago Braz da Silva—was warmly welcomed by the games' host nation. Mr. da Silva broke the Olympic record in Rio de Janeiro on August 15th, and went on to win the competition. He beat the previous Olympic best of 5.97m, set by French vaulter Renaud Lavillenie in London four years ago, by six centimeters. Mr. Lavillenie was in Rio to defend his title, but could only finish second. He was jeered by the home crowd throughout the competition, in a display of nastiness that Thomas Bach, the president of the International Olympic Committee, has described as “shocking” and “unacceptable at the Olympics.”

The needless booing from the stands spoiled what should have been a moment of triumph for Brazilian athletics. Yet impressive as it was, Mr. da Silva's bound over the bar could only match the world record for the pole vault as it stood nearly 30 years ago, in 1987: since then the record has crept up to an impressive 6.16m, set in 2014.

In fact, of the various jumping competitions for men, the pole vault is the only one to have seen regular progression in the world record throughout its history. Since the International Association of Athletics Federations began keeping track of these things in 1912, the men's triple-jump and long-jump world records have increased around 18%; the men's high-jump world record has improved by 23%. But today's pole-vault world record is 53% higher than the 1912 record, set by American Marc Wright on June 8th, 1912.

For women, the improvement in jumping is more pronounced all round. High, long and triple-jump records have risen around 45-50% in the last century; the pole-vault mark has lifted from an unimpressive 1.44m to 5.06m, set in 2009 by Yelena Isinbayeva, a towering Russian responsible for setting 17 of the last 19 records. (Ms. Isinbayeva has been barred from this year's games along with most of the Russian track-and-field team, after the World Anti-Doping Agency found evidence of state-sponsored steroid use.)

Though no data is available to compare events, it seems unlikely that the enormous gains in the pole vault are due to a proportionately higher number of people giving it a go. So what has caused pole vaulting to come on in leaps and bounds, while similar-styled sports hop and skip along?

One cause is the equipment. The pole gives athletes a way to store and convert horizontal energy into a vertical leap, explains Peter McGinnis, a professor at the State University of New York at Cortland. They have not grown in length—the limit remains 5.3m—but there was a marked improvement in pole-vaulting records with the move from static wooden or steel poles to more flexible carbon-fiber ones in the 1960s: the men's world record stretched

64cm further from the ground in that decade.

Manufacturers turned next to improving durability. Steve Chappell of UCS, a manufacturer of sporting equipment, explains that the biggest modern development has been the dependability of poles, which gives athletes the confidence to push themselves further. Because poles are now less likely to break when they bend, vaulters are more willing to trust them.

This is shown most clearly by where vaulters grip the pole before hurtling themselves toward the bar, explains Pat Manson, a former professional vaulter who now trains athletes in the discipline. When Mr. Manson was competing in the 1980s and 1990s, vaulters would grip the pole half a meter from the top. Now, they are giving themselves less than 15cm from the top. Both Mr. Manson and Mr. Chappell single out Mr. Lavillenie, the men's world-record holder, for being particularly daring in his grip. Holding the pole closer to the end allows more bend and spring when released, thrusting the athlete higher.

There are other explanations, too. For one thing, the pole vaulter of 2016 bears little resemblance to the vaulter of 1912. Athletes have become bigger and bulkier, packing muscle more densely onto their bodies, which gives them the explosive force required to fling themselves several meters into the air. And as sports science develops, athletes are squeezing out the last few centimeters of height by honing their techniques. Mr. Lavillenie is not the biggest athlete, but he is the most fluid. He may also be the most foolhardy, flinging himself with wild abandon with hardly a grip on the tip of the pole. Believing that the rod you are using to leap six meters in the air is unlikely to snap makes a world of difference.

Questions (For Questions 1–5, choose the best answer (A), (B), (C), or (D).)

1. Which is the most appropriate title for this article?
 - (A) Brazilian Athlete Dominates Men's Pole Vaulting
 - (B) Russian Athlete Dominates Women's Pole Vaulting
 - (C) Stronger Athletes but Even Stronger Poles
 - (D) Stronger Humans and Bigger Jumps

2. According to the article, _____.
 - (A) Thiago Braz da Silva broke the Olympic record in Rio de Janeiro
 - (B) Thiago Braz da Silva broke the world record in Rio de Janeiro
 - (C) Renaud Lavillenie beat his own record in Rio de Janeiro
 - (D) Renaud Lavillenie did not finish competing in Rio de Janeiro

3. According to the article, the home crowd in Rio de Janeiro _____.
- (A) did not like Renaud Lavillenie because he is French
 - (B) helped Thiago Braz da Silva to win
 - (C) prevented Renaud Lavillenie from competing
 - (D) ruined the atmosphere of the victory
4. The word "hurtling" in Underline (2) is closest in meaning to _____.
- (A) bringing
 - (B) pumping
 - (C) rolling
 - (D) throwing
5. The word "honing" in Underline (3) is closest in meaning to _____.
- (A) examining
 - (B) improving
 - (C) practicing
 - (D) showing
6. Explain in your own words what question the author of the article is asking in Underline (1). The first part of the answer has been started for you in the answer sheet. Complete it with your explanation, adding between 20 and 30 words. Write in English. In the blank on the answer sheet, put the number of words you wrote. (Do not count punctuation such as periods and commas as words.)

III

Read the following conversation between a little girl and her father. Summarize and explain the goals, and the strategies to reach these goals, of both the little girl and the father. Write 60 to 80 words in English. In the blank on the answer sheet, put the number of words you wrote. (Do not count punctuation such as periods and commas as words.) Avoid copying, but you can include keywords and phrases.

Little Girl: Dad! Today is Friday. It's pocket money day!

Father: Oh yes, I almost forgot. Here's your 100 yen. How much have you saved up so far?

Little Girl: Nothing.

Father: You're spending it all every week?

Little Girl: Yes, of course. That's what it's for.

Father: Yes, but if you save your money you can buy something better after a few weeks. OK, I have an idea. I'll give you 100 yen extra every time you save 500 yen.

Little Girl: I have a better idea. Why don't you just increase my pocket money to 500 yen per month instead of 100 yen per week? That way I have to wait longer to get it and can't spend it.

Father: Well, there are two problems with that. Number one, if we do that, I'm really saving the money for you, and I want you to save it for yourself. And number two, that's about 100 yen for every 400 yen you save, because there are about four weeks in a month. I offered you 100 yen for every 500 yen you save, which means 100 yen every five weeks.

Little Girl: OK, let's do it this way. I save the money every week, but you give me an extra 100 yen every month if I haven't spent any of it.

Father: Well OK. One thing is for certain, you're not good at saving money, but you really are good at negotiating.

IV The following is a radio interview with a Universal Studios tour guide about her job. Write the most appropriate word for each blank using the first letter provided. A sample answer is given for Number (1) on the answer sheet.

Interviewer: Hi, listeners. On today's show about people who have interesting or unusual jobs, we are talking with Aurora Nibley. Hi, Aurora, welcome to our s _____.

Aurora: Thanks, it's nice to be here.

Interviewer: How did you become a tour guide at Universal Studios?

Aurora: Getting hired is kind of a long process. A hundred people s _____ up the day I was there. They narrow it down to 20-25 people, who are put in a training class that lasts three weeks. At the end of the c _____, you have a written test and a practice run on the tram. They ended up hiring 15 people.

Interviewer: How often do they have auditions?

Aurora: They have auditions twice a year: once at spring break, and once at summer break. They hire more people for the summer. Last summer they hired about 30, w _____ is the most they have ever taken.

Interviewer: Do they t _____ to hire people who want to be actors?

Aurora: They definitely like people with acting backgrounds. The tour is basically a one-person show. The guide's g _____ a performance.

Interviewer: How many tours do you do each day?

Aurora: I'll do about four tours a day, depending on h _____ busy we are. If we're crazy-busy, I might do five. The scheduled shift is seven hours.

Interviewer: I guess I have to ask this: Do you e _____ see famous people?

Aurora: Oh yeah. It doesn't happen every day, but one of the guides told me a story. One time, the actress Dakota Fanning took a tram tour and sat in the front. We have a video camera and screens i _____ on the tram; when we got to the two-minute *War of the Worlds* part of the tour, the guide put the camera on her and said, "Well, you were in this movie, why don't you tell us what h _____ here?" She did it—it was really sweet o _____ her.

Interviewer: Have you ever seen the same people during the tour?

Aurora: There are people who g _____ obsessed with the tram tour. They'll buy annual passes and ride the tram again and again. Some people k _____ every single tour guide's tour and will recite the tour with you.

Interviewer: Is there a favorite part of the tour for you?

Aurora: I like it when people get right into it. Like *Jaws*—to the kids everything is

real. They've replaced the *Jaws* shark like four or five times to appear a little different, and even though it still looks really fake, little kids will really believe in it. There's also one part of the tour called "The Mummy's Tomb," where the walls spin, and I tell the driver not to go in, but he does anyway, which is, of course, planned.

Interviewer: How much money will you do this?

Aurora: I can see myself doing this for another year or two. It's a job, not a career.

SOURCES

- I British Broadcasting Company, April 1, 2016.
<http://www.bbc.com/earth/story/20160331-the-worlds-loudest-animal-might-surprise-you>
(一部変更)
- II The Economist, August 17, 2016.
<http://www.economist.com/blogs/gametheory/2016/08/raising-bar>
(一部変更)
- III Original text.
- IV S. Yeagley. "Aurora Nibley, Universal Studios Tour Guide." Interviews with People who Have Interesting or Unusual Jobs. November 21, 2006.
<https://www.mcsweeneys.net/articles/aurora-nibley-universal-studios-tour-guide>
(一部変更)