

福井大学

平成 31 年度入学者選抜学力検査問題

〈前期日程〉

外 国 語

英 語

(医学部 医学科)

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ない。
- 2 問題はⅠからⅣまでである。
試験開始の合図のあとで問題冊子の頁数(1～13頁)を確認すること。
- 3 解答は必ず解答用紙の所定の欄に記入すること。
所定の欄以外に記入したものは無効である。
- 4 解答用紙は持ち帰ってはいけない。
- 5 問題冊子は持ち帰ってよい。

福井大学

問題訂正

科目名 (外国語 (英語))

問題冊子

P. 3 1 語群の中の

(e) flows を (e) flow に訂正

I 次の英文を読み、空所(1)から(15)を補うのに適切な1語を下の語群内の(a)から(o)より選び、記号で答えなさい。なお、(7)は2か所あり、同じ語が入ります。

There's nothing about the opah* that says "fast-moving predator". Tuna*, sharks, and swordfish* are fast-moving predators and accordingly, their bodies look like torpedoes*. By contrast, the opah looks like a big startled Frisbee, with thin red fins stuck on as an afterthought.

It's pretty (silver body and red fins) and big (up to two meters long), but fast? Nicholas Wegner from the National Oceanic and Atmospheric Administration certainly didn't think so when he first started studying it. Since then, he has discovered that the opah is an active predator, which has a trait that no other fish (1).

It is warm-blooded.

Most fish have body temperatures that match the surrounding water. A small number of them can warm (2) parts of their bodies. Swordfish can temporarily heat their eyes and brains, sharpening their vision when pursuing prey. Tuna and some sharks can do the same with their swimming muscles, going into turbo mode when they need to. But none of these animals can heat their entire bodies. Their hearts and other vital (3) stay at ambient* temperature, so while they can hunt in deep, cold waters, they must regularly return to the surface to warm their innards*.

The opah has no such problem. It can consistently keep its *entire* body around 5 degrees Celsius warmer than its environment. It doesn't burn as (4) as a bird or mammal, but it certainly outperforms* its other relatives.

Wegner discovered its ability by accident. His team just happened to catch more opah during one of their research trips, and they used the opportunity to learn more about this little-known (5). As they dissected* the animals, Wegner immediately noticed that its gills* contain a beautiful and complex tangle* of red and blue blood vessels*. "That was when we realised what it was (6) of," he says. Wegner had seen blood vessels like those before. They're called *retia mirabilia**—Latin for "wonderful nets"—and they're the secret behind the heating systems of tuna and sharks.

All animal muscles produce heat when they contract, but in most fish, that heat is almost immediately lost to the environment through the skin or the gills. The gills are especially problematic. No matter how much insulation* a fish has, the blood that (7) through the gills *has to* make close contact with the seawater. A tuna can produce as much heat as it likes in its swimming muscles, but as soon as the blood from those muscles reaches the gills, as it must do to be reloaded with oxygen, it ought to quickly (8). But it doesn't, because of

the wonderful nets.

In those nets, the veins that carry warm blood away from the hot muscles are interwoven with the arteries that carry cold blood in from the gills. They run so close that the veins offload* their heat onto the arteries, before it can (9) the gills and disappear. Through these “countercurrent* exchangers”, the tuna can retain whatever heat it generates. But since its retia mirabilia are located in its swimming muscles, those are the only body parts that stay warm. That’s why its heart still (7) cold.

The opah’s wonderful nets *are in its gills*, and that makes all the difference. The blood vessels carrying warm blood from heart to gills (10) next to those carrying cold blood from the gills to the rest of the body, warming them up. So, while a tuna or shark might isolate its warm muscles from the rest of its cold body, the opah flips* this arrangement. It isolates *the cold bits*—the gills—from *everything else*.

This (11) its huge pectoral muscles*, which generate most of its heat, to continuously warm the rest of its body. It also keeps that heat with the help of (12) layers of fat, which insulate* the heart from the gills, and the pectoral muscles (which produce most of the animal’s heat) from the surrounding water.

Wegner’s team confirmed this by catching opah, implanting them with small thermometers, and then releasing them. The (13) inside the fish recorded consistently higher temperatures than those dropped into the surrounding water. The opah’s brain is warm. Its muscles are warm. And perhaps most importantly, its heart is warm—a (14) for a fish. “That’s why opah can stay at depth,” says Wegner. “These guys are specialised for living deeper than those other predators.”

So, it’s fast, then? Despite the somewhat comical physique*? “That’s what really blew my mind about this discovery,” says Wegner. “Just from looking at it, I really thought it was a slow, sluggish*, deep-water fish that doesn’t do very much. But all (15) are that this is a very fast fish and an active predator. We’ve put some tags on them to show that they migrate thousands of kilometers.”

—From Ed Yong, “Meet the Comical Opah, the Only Truly Warm-Blooded Fish,” *National Geographic*, May 14, 2015. 一部改變.

Notes: opah アカマンボウ	tuna マグロ	swordfish メカジキ
torpedo 魚雷	ambient 周囲の	innard 内臓
outperform 優れている	dissect 解剖する	gill えら
tangle 絡み	blood vessel 血管	
retia mirabilia 奇網(脊椎動物に観察される動脈と静脈からなる構造)		
insulation 断熱性	offload ~を取り除く	countercurrent 逆流
flip 入れ替える	pectoral muscles 胸筋	insulate 断熱する
physique 体つき	sluggish 不活発な	

語 群

- | | | | |
|-------------|---------------|-----------------|-----------------|
| (a) allows | (b) capable | (c) cool | (d) first |
| (e) flows | (f) hot | (g) indications | (h) instruments |
| (i) organs | (j) possesses | (k) reach | (l) runs |
| (m) species | (n) specific | (o) thick | |

(白 紙 頁)

II 次の英文を読んで下の質問に答えなさい。問6以外、すべて日本語で解答すること。

The messenger got off his bicycle in front of the house of Mrs. Rosa Sandoval. He went to the door and knocked gently. He knew almost immediately that someone was inside the house. He could not hear anything, but he was sure the knock was bringing someone to the door and he was most eager to see who this person would be—this woman named Rosa Sandoval who was now to hear of murder in the world and to feel it in herself. The door was not a long time opening, but there was no hurry in the way it moved on its hinges*. The movement of the door was as if, whoever she was, she had nothing in the world to fear. ⁽¹⁾ Then the door was open, and there she was.

To Homer the Mexican woman was beautiful. He could see that she had been patient all her life, so that now, after years of it, her lips were set in a gentle and saintly smile. But like all people who never receive telegrams the appearance of a messenger at the front door is full of terrible implications. Homer knew that Mrs. Rosa Sandoval was shocked to see him. Her ⁽²⁾ first word was the first word of all surprise. She said “Oh,” as if instead of a messenger she had thought of opening the door to someone she had known a long time and would be pleased to sit down with. Before she spoke again she studied Homer’s eyes and Homer knew that she knew the message was not a welcome one.

“You have a telegram?” she said.

It wasn’t Homer’s fault. His work was to deliver telegrams. Even so, it seemed to him that he was part of the whole mistake. ⁽³⁾ He felt awkward and almost as if he *alone* were responsible for what had happened. At the same time he wanted to come right out and say, “I’m only a messenger, Mrs. Sandoval. I’m very sorry I must bring you a telegram like this, but it is only because it is my work to do so.”

“Who is it for?” the Mexican woman said.

“Mrs. Rosa Sandoval, 1129 G Street,” Homer said. He extended the telegram to the Mexican woman, but she would not touch it.

“Are you Mrs. Sandoval?” Homer said.

“Please,” the woman said. “Please come in. I cannot read English. I am Mexican.” She paused a moment and looked at the boy standing awkwardly as near the door as he could be.

“Please,” she said, “what does the telegram say?”

“Mrs. Sandoval,” the messenger said, “the telegram says—” ⁽⁴⁾

But now the woman interrupted him. “But you must *open* the telegram and *read* it to me,” she said. “You have not opened it.”

“Yes, ma’am,” Homer said, as if he were speaking to a school teacher who had just corrected him.

He opened the telegram with nervous fingers. The Mexican woman stooped* to pick up the torn envelope, and tried to smooth it out. As she did so she said, "Who sent the telegram—my son Juan Domingo?"

"No, ma'am," Homer said. "The telegram is from the War Department."

"War Department?" the Mexican woman said.

"Mrs. Sandoval," Homer said swiftly, "your son is dead. Maybe it's a mistake. Everybody makes a mistake, Mrs. Sandoval. Maybe it wasn't your son. Maybe it was somebody else. The telegram says it was Juan Domingo. But maybe the telegram is wrong."

The Mexican woman pretended not to hear.

"Oh, do not be afraid," she said. "Come inside. Come inside. I will bring you candy." She took the boy's arm and brought him to the table at the center of the room and there she made him sit.

"All boys like candy," she said. "I will bring you candy." She went into another room and soon returned with an old chocolate candy box. She opened the box at the table and in it Homer saw a strange kind of candy.

"Here," she said. "Eat this candy. All boys like candy."

Homer took a piece of the candy from the box, put it into his mouth, and tried to chew.

"You would not bring me a bad telegram," she said. "You are a good boy—like my little Juanito* when he was a little boy. Eat another piece." And she made the messenger take another piece of the candy.

Homer sat chewing the dry candy while the Mexican woman talked. "It is our own candy," she said, "from cactus*. I make it for my Juanito when he comes home, but *you* eat it. You are my boy too."

Now suddenly she began to sob, holding herself in as if weeping was a disgrace*. Homer wanted to get up and run but he knew he would stay. He even thought he might stay the rest of his life. He just didn't know what else to do to try to make the woman less unhappy, and if she had *asked* him to take the place of her son, he would not have been able to refuse, because he would not have known how. He got to his feet as if by standing he meant to begin correcting what could not be corrected and then he knew the foolishness of this intention and became more awkward than ever. In his heart he was saying over and over again, "What can I do? What the hell can I do? I'm only the messenger."

The woman suddenly took him in her arms saying, "My little boy, my little boy!"

—From William Saroyan, *The Human Comedy* (1943), 一部改変.

Notes: hinge 蝶番(ちょうつがい) stoop かがむ Juanito Juanの愛称
cactus サボテン disgrace 不名誉

問 1 下線部(1)を和訳しなさい。

問 2 下線部(2)の “terrible implications” として具体的にどのようなことが考えられますか。

問 3 下線部(3)の記述から、この時 Homer の気持ちがどのように変化したと分かりますか。具体的に説明しなさい。

問 4 下線部(4)で Homer は電報が開封されていないにもかかわらず、なぜその内容について説明しようとしたのかを述べなさい。

問 5 下線部(5)において、Homer のどのような気持ちが表れているのかを述べなさい。

問 6 本文の内容に関する以下の英文に関して、正しいものには○、間違っているものには×で答えなさい。

(1) When Homer tried to give Mrs. Sandoval the telegram, she did not want to take it because she was sure that it would be bad news.

(2) Mrs. Sandoval treated Homer to candy because she wanted to associate him with her son, whose death she wanted to deny.

(3) Homer made an excuse to Mrs. Sandoval, saying that delivering the telegram to her was his job, when he brought it to her.

(白 紙 頁)

Ⅲ 次の英文を読んで下の質問に答えなさい。ただし、問1、問2の2)以外は日本語で解答すること。

How well do you remember the dinners you enjoyed with your friends, the ones where you left feeling as if you had eaten more than you could manage? Or in the opposite direction, the meals where you didn't order a pudding, because (1)?

Perhaps you can blame social cues for eating too much or too little. Several decades of research shows that we eat more in company, and we follow what and how others eat.

But how exactly do our companions affect what we eat, and can we tap into* these social influences to cut down on fats and sugar, and even lose weight?

A series of diary studies by health psychologist John de Castro in the 1980s alerted us to social influences in eating. By 1994, de Castro collected diaries of over 500 people recording their meals and the social context of how they ate them—in company, or alone.

To his surprise, people ate more in groups than when they were by themselves. Experiments by other scientists also found that people ate 40% more ice-cream and 10% more macaroni and beef in company than when alone. De Castro named the phenomenon 'social facilitation' and described it as the "single most important and all-pervasive* influence on eating yet identified".

Why do we eat more when we eat with someone else? Hunger, mood, or distracting social interactions were all discounted by de Castro and other scientists. Studies reveal that we extend our meal times when we eat in a group, and we eat more in those extra minutes.

Careful observation in a range of eateries* showed that bigger groups do enjoy longer meals. And when (2), larger parties no longer eat more than smaller ones. In a 2006 experiment, scientists gathered 132 people and gave them either 12 or 36 minutes to eat cookies and pizza. The participants ate alone, in pairs or in groups of four. Within each specific meal time, participants ate similar amounts regardless of their party size. This lab experiment provided one of the strongest evidence that longer meal time is key to larger meal sizes in social eating.

It seems very plausible that when we dine with our friends, we might linger, and therefore
(1) reach for yet another slice of cheesecake.

When we anticipate a group meal, we even order more food individually. This was revealed from observations in an Italian restaurant: the larger a dining party, the more pastas and desserts each diner ordered. Social meals appear to make us hungrier, and it appears that we decide that we will indulge even before we order. Such observations led C Peter Herman, a food scientist, to propose his 'feast hypothesis': indulgence* is part and parcel of social meals,

and that we socialise* partially so that we can all eat more without the guilt of overindulgence.

But sometimes we do eat less in company. Our drive to indulge can be tamed by the need to behave. We could manage our impression by eating according to social norms; or we might observe how others are eating and follow their lead, a behaviour called social modelling.

One 2014 study revealed that such behaviour was found to have a moderate effect on food intake. Females tend to have stronger reactions to males, and we also tend to follow cues from people who are more like us. These patterns align with* the notion that we pick up the cues of what is appropriate behaviour and eat accordingly.

So far, very few studies have considered why we might have evolved to eat according to social context.⁽²⁾ Perhaps heeding* social norms and not eating more than others might have facilitated food-sharing among our hunter-gatherer ancestors. And eating like others could help children develop preferences for safe and nutritious* foods, and therefore avoid potentially dangerous foods.

“We can learn by trial and error but that’s risky and can make us very ill. I think it could be very important from a young age to observe other people and eat like them, especially those who survive to old age because their food choices are likely to be very (3)”, says Suzanne Higgs, professor in the psychobiology of eating at the University of Birmingham.

Unfortunately, as crisps* and sweet treats are so readily available, our current eating norms can slide down a greasy* slope. People tend to eat as their close social circles do, and they are less concerned with overeating if everyone eats more and gains weight together. In such circles, “we can fail to recognize obesity* because it has become the majority”, says Sarah-Jeanne Salvy, associate professor of preventive medicine at the University of Alabama.

Salvy studies social aspects of eating and obesity. “When told what they should weigh based on the BMI* chart, some people are surprised and think that the chart was wrong to give impossible criteria,” says Salvy. A shift in social norms towards heavier weights can partially explain why many are gradually eating their way to obesity—the World Health Organization says as many as one billion people across the world are obese*, including 340 million children.

—From <http://www.bbc.com/future/story/20180430-why-you-eat-more-when-youre-in-company>, 一部改變.

Notes: tap into 利用する	pervasive 浸透する	eatery 飲食店
indulgence 無節制	socialise 付き合いをする	align with ~と合致する
heed 注意を払う	nutritious 栄養のある	crisp ポテトチップス
greasy 油っこい	obesity 肥満	BMI 体格指数
obese 肥満の		

問 1 空欄(1)~(3)それぞれに入る適切な語句を 1)~4)から 1つずつ選択し, 数字で答えなさい。

- (1) 1) nobody else did
 2) you preferred it
 3) everybody did
 4) you didn't like it
- (2) 1) meal time is longer
 2) meal time is fixed
 3) meal size is larger
 4) meal size is limited
- (3) 1) risky and ill
 2) greasy and unhealthy
 3) formal and bland
 4) correct and appropriate

問 2 John de Castro の研究について下記の質問に答えなさい。

- 1) de Castro は研究結果からどのようなことを明らかにしたのか述べなさい。
 2) 1)の説を要約する英語二語を本文中から抜き出しなさい。
 3) 1)の説を唱える研究者らが分析する時, 考慮しなかった三つの点を挙げなさい。

問 3 下線部(1)を和訳しなさい。

問 4 下線部(2)において, ほとんどの研究が考察しなかった理由として二つのことが考えられると筆者は述べています。それらは何か書きなさい。

問 5 なぜ近年肥満が増加しているのかを本文に即して説明しなさい。

(白 紙 頁)

IV AI (artificial intelligence : 人工知能) が私たちの未来を変えるものとして注目を集めています。AI が私たちの社会や生活に恩恵をもたらすと考えられている一方で、それに批判的な意見もあります。AI の導入による懸念や否定的側面についてのあなたの考えをその論拠とともに 90～100 語の英文で述べなさい。なお、文末に使用した語数を記すこと。