

2023年度

G 3

英 語

2月25日(土) 工 学 部
【前期日程】

12:30~13:50

注 意 事 項

試験開始前

- 1 監督者の指示があるまで、問題冊子、解答用紙に手を触れてはいけません。
- 2 監督者の指示に従って、全部の解答用紙(3枚)に受験番号を記入しなさい。

試験開始後

- 3 この問題冊子は、9ページあります。はじめに、問題冊子、解答用紙を確かめ、枚数の不足や、印刷の不鮮明なもの、ページの落丁・乱丁があった場合は、手をあげて監督者に申し出なさい。
- 4 解答はすべて解答用紙に記入しなさい。
- 5 問題は、声を出して読むではいけません。
- 6 配点は、比率(%)で表示してあります。

試験終了後

- 7 問題冊子は、必ず持ち帰りなさい。

1

Read the following passage and answer the questions. (30 %)

Despite the many rumors to the contrary, my grandfather did not die driving an Acme car across his pond. As I will demonstrate, this is not true. Admittedly, he had started behaving strangely in recent years. In view of the attempted firing of the courthouse cannon last July, it would be foolish to state otherwise. But certain untrue stories now in circulation are unfair to his family's memory of him and must be corrected.

While strange, many of the stories about his attempts to get the local Acme franchise* are true. Just after Acme wagons were introduced in this country, he bought one for use on his farms. For reasons none of us will ever know, he began to take an interest, a very active interest, in helping the Acme company. He decided at age seventy-one to become the local dealer for the car, but because of his advanced years and strange behavior, the company said no. He bought ⁽¹⁾three more Acmes, either to impress the company managers or maybe out of pure enthusiasm. These cars, he gave to his grandchildren. (One is still in the author's possession and running perfectly.) But not even his extra purchases brought so much as a discount from the home office.

At this point in Grandfather's attempt to secure the franchise, he came up with the idea for the much-discussed "pond-drive." Having read in the owner's manual that the Acme car keeps water out more perfectly than almost any other car, he decided to personally demonstrate and document ⁽²⁾this fact, thus winning the long-sought-after approval of Acme International. To his farm near Little Easonburg, he called six of his farm workers and one twelve-year-old grandson. They were stationed at 1.5-meter intervals along the pond bank, each man ⁽³⁾equipped with a camera and film and ready to take photographs. The pond itself is a small one used to store water for the farm. My grandfather had at one time stocked the pond with fish which some of the lazy workers are said to have fished out and eaten before they could reproduce.

His theory was that the spinning rear tires would move the car through the water. He evidently drove it slowly down the east bank, sounding the horn: a signal to "Aim all cameras." Eased into the water, the car actually floated and started to move. Once it reached the center of the pond, it slowly drifted toward the shore, the speedometer showing 180 km/h while the vehicle advanced at only about 5 km/h through the water. Some moisture did leak in, but hardly enough to sink the car, as many have falsely reported. The experiment, in short, was an overwhelming success. When the car containing my grandfather finally climbed up the opposite bank, the six farm workers and one grandson, the writer's first cousin, are said to have let out a sudden cheer.

It was immediately afterwards, while taking the car for a quick land drive — toward the nearest public telephone some three kilometers away — that the fatal accident occurred. When he hit the curve on Band Road, Grandfather seems to have lost control of the car. It crashed over a low bridge and into a farm pond much deeper than his own. He had lowered the car's windows, to dry what little water had ⁽⁴⁾originally leaked in. With all the windows open, his Acme did not float long this time. He went down with it.

I have given all these details to point out that the pond in which he drowned was more than two kilometers from the original site of his *successful* experiment. This, I hope, will put an end to rumors that his death was the result of a ⁽⁵⁾foolish mistake. Though the “pond-drive” photographs did not come out because of the dust and exhaust from the car, we still have the witnesses' spoken accounts. In short, the man died having proved something, which is more than most of us can say. Acme International, hearing of his death, sent our family a letter signed by a vice-president of that company. It expressed gratitude for Grandfather's “pioneering consumer spirit,” and went on to say, “We could certainly use more customers with his brand of courage and determination.” This, I hope, will finally put a stop to all these rumors and permit his widow, children, and grandchildren to live normal lives again.

(Allan Gurganus, “A Public Denial.” *Flash Fiction: 72 Very Short Stories*, edited by James Thomas, Denise Thomas, and Tom Hazuka, Norton, 1992. Rewritten and simplified for this test.)

出典修正: (Allan Gurganus, “A Public Denial”, *The Available Press/Pen short story collection*, by PEN America, Ballantine, 1985.)

*支店, フランチャイズ

Questions. Answer all questions **in Japanese** except Question 3i and Question 4.

1. Why did the grandfather buy ⁽¹⁾three more Acmes?
2. What does ⁽²⁾this fact refer to in the passage?
3. The author writes that each person watching was ⁽³⁾equipped with a camera and film.
Were the cameras helpful?
 - i. Answer by writing “yes” or “no.”
 - ii. Explain why.

4. What does ⁽⁴⁾originally mean in the context of the passage? Choose the most appropriate answer from the following, and write (a), (b), (c), or (d).
- (a) when the car was in the factory
 - (b) when the car was first driven by its owner
 - (c) when the car crossed its owner's pond
 - (d) when the car went into the second pond
5. In spite of what many people think, how did the author's grandfather actually drown?
6. What do many people think was the grandfather's ⁽⁵⁾foolish mistake?

2

Each sentence has four underlined items, (a), (b), (c), and (d). Identify the item that needs to be corrected. Then correctly rewrite the entire item without changing the meaning. (10 %)

Example: I've (a) ever (b) been to Hawaii (c) but would like to go (d) sometime.

Answer:

Example	
(a)	never

1. (a) Almost tourists from Europe and North America seem (b) to have acquired a (c) good knowledge of Japanese culture before (d) coming to Japan.
2. We could (a) tell from the audience's faces that they (b) were (c) interested in (d) a speaker's ideas.
3. (a) Now that one of my classmates, (b) whom I used to talk with only two or three times a week on campus, has (c) gone overseas, we have begun to send text messages (d) for each other every day.
4. In the end, I decided (a) on one of the hotels (b) where the travel agency (c) had recommended (d) to me.
5. It suddenly started (a) raining, so we (b) had to run (c) into a nearby shop (d) for avoiding getting wet.

3

Read the following passage and answer the questions. (25 %)

These days, people are often worried about food security, which means the ability of each country to make its own food without depending on other countries. This issue has gotten more attention because of circumstances that have caused problems with food supply lines, such as the COVID-19 pandemic and the war between Russia and Ukraine, both of which are countries in the world's breadbasket*. A stable supply of food is especially important in developing parts of the world, including countries in Africa and Southeast Asia, and even people in developed countries like Japan may be worried about food as prices go up because of (1) these events. One way of dealing with food security comes from an unlikely source: bugs. That is, more people are exploring the possibility of insects as food.

Entomophagy, or eating insects, is actually not a new activity. Scientists have discovered that insects were an important source of food for humans who lived a long time ago because they were not yet able to grow their own food. There are also many cultures throughout the world that have a tradition of eating bugs, and this does not seem to have changed since long ago, even though other food customs have. Japan has its own insect dishes, such as rice grasshoppers (*inago*) and bee larvae (*hachinoko*). Although cultural taboos about eating bugs have made it less common since the Meiji period, entomophagy has its fans in Japan even today.

There are a number of advantages to including bugs in one's diet. First, insects are good for you because they have a lot of the protein and minerals that people need. This makes them especially useful for countries that have problems with food security. Insects are also cheap to grow as food and less harmful for the environment than other foods. If we compare the negative effect on nature of eating insects to that of eating other animals like cows and pigs, it is clear that insects are much better. They use fewer natural resources such as water, and take less energy to raise and move from one place to another. If the goal is to make the world a safer and more environmentally friendly place, one way to do that is to encourage people to eat insects more often.

Aside from these benefits, insects are useful as food because they are delicious and (2) there are many things that can be done with them. People who try eating insects for the first time often say that once they get past the negative image of putting a bug into their mouths and biting down on it, the taste is not just okay, but actually quite good. Insects can also be prepared in a number of different ways: they can be fried, ground into paste, prepared as a side dish, used as an ingredient in other dishes, or just eaten raw. For those who really cannot bring themselves to eat a bug whole, there are many ways to cook insects so that

people may not even know what they are eating.

Of course there are some problems that must be solved if insects are going to become more popular as food. Most seriously, eating insects is taboo in many cultures, and most of us have seen movies that show bugs (and people having to eat them) in order to shock the audience. This has created a strong mental barrier against eating insects. There are also worries about the safety of farming large numbers of insects for food. As with other foods that come from animals, insects can go rotten and cause a risk of food poisoning, and they can cause allergic** reactions. (3)There also may be a moral question since very large numbers of insects usually have to be raised and then killed to produce enough food. As with other animals, the possibility of pain and cruel treatment needs to be discussed, even with bugs.

In spite of these problems, however, it seems clear that bugs give people plenty of options for ways to add variety to the dinner table. More importantly, they help avoid or reduce many of the disadvantages of other kinds of meat such as beef, chicken, and pork. No matter how you feel about eating insects, it may soon be a worldwide phenomenon.

* 穀倉地帯

** アレルギーの

Questions. Answer all questions in Japanese except Question 5.

1. What are (1)these events?
2. According to the passage, why did ancient humans eat more insects than modern humans?
3. How can eating insects reduce negative effects on the environment in contrast to eating other animals?
4. The passage states that insects are useful as food because (2)there are many things that can be done with them. What are two examples of these things?

5. According to the passage, what is the main reason that many people today do not eat insects? Choose the most appropriate answer from the following, and write (a), (b), (c), or (d).
- (a) cost
 - (b) cultural influence
 - (c) poor flavor
 - (d) safety
6. The passage states: (3) There also may be a moral question since very large numbers of insects usually have to be raised and then killed to produce enough food. What is the moral issue involved in raising insects as food?

4

Choose the best word to complete the conversation between a travel agent and a customer.

(10 %)

Agent: Hello, what can I ⁽¹⁾ (do/have/help) for you today?

Customer: My wife and I want to take a trip overseas.

Agent: That's great. Where do you want to go?

Customer: Well, she wants to see Paris. We've never been there.

Agent: When are you ⁽²⁾ (considering/planning/thinking) of going?

Customer: At the end of next month.

Agent: That's the perfect time to go. The weather will be nice and it won't be too crowded yet.

Customer: Do you ⁽³⁾ (believe/offer/suggest) going on a tour?

Agent: Well, have you traveled in Europe before?

Customer: I was there many years ago, in London.

Agent: In that case, I think a tour is a good idea. Then you won't have to worry about getting around.

Customer: Yes, but will we have some time to ⁽⁴⁾ (alone/ourselves/together)?

Agent: What do you mean?

Customer: I've heard that with tours the schedule is always ⁽⁵⁾ (empty/flexible/full) and people don't have a lot of time to do things on their own.

Agent: Not to worry. I think we have just the thing — it's a tour that has a good balance of free time and optional group activities.

5

Read the following passage and answer the questions. (25 %)

Engineers have designed a new kind of fuel cell* that converts glucose (a major blood sugar) directly into electricity. The researchers created glucose fuel cells about 400 nanometers thick, or about one hundredth that of a human hair, and 300 micrometers wide. The tiny cells were able to produce 43 microwatts per square centimeter, the highest power density** of any existing glucose fuel cell.

The heart of the new device is made from ceramic materials, which keep their properties even at high temperatures. The new device does not break down when heated at temperatures up to 600°C. If used in a medical implant (a device inside the body), the fuel cell can remain stable through the high-temperature sterilization*** process required for all such devices.

The first glucose fuel cells, introduced in the 1960s, were quickly replaced by lithium-iodide (LiI) batteries, which would become the standard power source for medical implants. However, batteries have a limit to how small they can be made, as their design requires space to store energy.

The new fuel cells convert energy directly rather than storing it in a device. The researchers believe the new design could be made into very thin films and wrapped around implants to power electronics using the body's plentiful glucose supply. This is the first time that ceramic materials have been used for glucose-to-power conversion, defining a new type of fuel cell.

*fuel cell : 燃料電池

**power density : 出力密度

***sterilization : 殺菌

(Adapted from MIT News, "Ultrathin fuel cell uses the body's own sugar to generate electricity," May 12, 2022, <https://news.mit.edu/2022/glucose-fuel-cell-electricity-0512> 一部改編)

Questions

1. Based on the article, approximately how many micrometers thick is a human hair?
2. According to the article, what is the main advantage of using ceramic materials in medical implants? Answer within 30 characters (letters) **in Japanese**.
3. According to the article, what do you think is the advantage of using glucose to power medical implants? Answer within 50 characters (letters) **in Japanese**.

正解・解答例

教科・科目名	英語（前期日程試験：令和5年度） 1 / 1	問題番号	G3
対象学部・学科(課程)等	工学部		
1 (30) % 配点 (60) 点	<p>1. Acme の経営者たちに自己アピールするため、または純粋な熱意から。</p> <p>2. Acme 車が一番防水性能に優れていること。</p> <p>3. i. No ii. 埃や排気ガスのせいでうまく映っていなかったから。</p> <p>4. (c)</p> <p>5. 実験のあとの事故で別の溜池に落ちて（窓が開いていたから）沈んだ。</p> <p>6. (防水性能を証明するために) 自分の溜池を車で渡りきろうとしたこと。 (「防水性能を証明するために」だけは部分点)</p>		
2 (10) % 配点 (20) 点	<p>1. (a) Most (Almost all も可)</p> <p>2. (d) the</p> <p>3. (d) to</p> <p>4. (b) that (which も可)</p> <p>5. (d) to avoid</p>		
3 (25) % 配点 (50) 点	<p>1. コロナ禍とウクライナ戦争。</p> <p>2. まだ食べ物を作る技術がなかったから。</p> <p>3. 水などの資源の使用量や（養殖と運搬にかかる）エネルギー消費が比較的少ない。</p> <p>4. 以下のうちから2つ： ・揚げ物として食べられる。 ・ペーストにして食べられる。 ・副菜として食べられる ・材料として食べられる。 ・生で食べられる。</p> <p>5. (b)</p> <p>6. 虫が苦痛を感じたり虐待されたりしていると思うかもしれないという問題。</p>		
4 (10) % 配点 (20) 点	<p>(1) do</p> <p>(2) thinking</p> <p>(3) suggest</p> <p>(4) ourselves</p> <p>(5) full</p>		
5 (25) % 配点 (50) 点	<p>1. 40 (7%)</p> <p>2. セラミックスは高温でも安定で、高温の殺菌処理に耐えること (28字) (9%)</p> <p>3. 体内のグルコースを使えるので、エネルギーを蓄えるスペースが必要なくサイズを小さくできること (45字) (9%)</p>		

採点・評価基準(具体的基準)

教科・科目名	英語 (前期日程試験：令和5年度) 1 / 2	問題番号	G3
対象学部・学科(課程)等	工学部		
出題のねらい	<p>① 物語文を読んで、話の展開や内容、登場人物の行動、場面状況等を把握する英文読解力をみる。</p> <p>② 英語の文法および語法の知識に基づき、適切な形式での表現力をみる。</p> <p>③ 現代社会の課題に関する議論を読んで、内容を正確に把握する英文読解力をみる。</p> <p>④ 英語コミュニケーションの中で、文脈に応じて適切な語彙を選び、使用する力をみる。</p>		
採点基準 (点数は200点満点の場合)	<p>① 配点30% (60点)</p> <p>1 10点 2 10点 3 10点 (i. yes/no 2点, ii. 説明 8点) 4 6点 5 12点 6 12点</p> <p>② 配点10% (20点)</p> <p>4点×5</p> <p>③ 配点25% (50点)</p> <p>1 8点 2 8点 3 10点 4 8点 (4点×2) 5 6点 6 10点</p> <p>④ 配点10% (20点)</p> <p>4点×5</p>		

採点・評価基準(具体的基準)

教科・科目名	英語（前期試験：令和5年度）	2 / 2	問題番号	G3
対象学部・学科(課程)等	工学部			
出題のねらい	<p>5 体内埋め込み型燃料電池について書かれた文章の論理的展開を把握して、英語の読解力を問うとともに、工学者としての素養（論理的思考力・表現力等）を問う。</p> <p>問1では、本文の内容から髪の毛の太さを概算する。</p> <p>問2では、本文の内容について説明する。</p> <p>問3では、本文の内容について説明する。</p>			
採点基準 (点数は200点満点の場合)	<p>5 配点25% (50点)</p> <p>1. (配点14点) 英語の内容から概算が正しくできていること。</p> <p>2. (配点18点) 英語の内容からセラミックスの特性と、それをいかした応用が読み取れていること。</p> <p>3. (配点18点) 英語の内容から、燃料電池の燃料である糖質が体内から供給可能で、エネルギーを蓄えるスペースが必要なく小さくできることが読み取れていること。</p>			