

第5問 (配点 15)

You are going to make a poster presentation titled "The person who promised warm meals", using information from the newspaper article below.

Today, some 90 percent of American homes have a microwave oven, and they heat various kinds of food quickly. Known for its speed and ease of use, this indispensable kitchen appliance was born as a byproduct of an accident. During a radar-related study for military purposes, an electrical engineer named Percy Spencer noticed something odd. When he was experimenting with a magnetron (the microwave tube which generates radiation that could be used in a radar) he discovered that a peanut cluster bar in his pocket melted. Intrigued by this strange phenomenon, Spencer tried another experiment. This time he placed some popcorn near the tube. They began to crack and pop. Soon, Spencer snacked on the world's first microwave popcorn.

Percy Spencer was born in Maine, the U.S. in 1894. Growing up poor, young Spencer had to support his family and could not afford a formal education. Modern technology and science was not at all familiar to him. But he was a very smart and curious boy. When Spencer got a job to install electricity at the nearby paper mill at 14, he wanted to get his job done faster. It was not surprising that his inborn curiosity led him to teach himself more about electricity, which allowed him to get his job done much more efficiently.

A few years later, Spencer joined the Navy and learned about radio. He found that, to be skillful in radio, he needed to learn physics and chemistry. He studied these all by reading textbooks. After World War I, Spencer got hired in a newly-established American manufacturing company, Raytheon. By the 1930's, Spencer had become one of Raytheon's most valued engineers.

In 1939, when Raytheon began to develop military radar, Spencer took a leading role in it. The key to radar technology was the magnetron, which was a tube with holes that generated microwaves. However, to produce a magnetron cost a great

amount and required a complicated process. Spencer discovered the way to make the process far simpler, allowing mass production of magnetrons. This success was a milestone in a radar technology, giving Raytheon a great profit at the same time.

Then the fateful moment came. "A sticky mess" — later Spencer described it. He was trying to improve on the magnetron tubes. He was testing one of his magnetrons with his hand in his pocket, when he experienced a strange phenomenon stated in the opening paragraph.

The next morning, Spencer and his curious colleague put an egg near the magnetron tube. They both watched as the egg began to quake. Soon, it exploded and splattered its content all over the colleague's face. Spencer came to a scientific conclusion that the melted peanut cluster bar, the popped popcorn, and the exploded egg were all caused by the rapid rise in the temperature inside the food due to exposure to microwaves. After further experimentation, he created a device that formed the base of what we call today the microwave oven. Other engineers in the company went on improving the new device for practical use. By late 1946, the Raytheon obtained a patent explaining how microwaves could be used to cook food. Soon, a microwave oven to heat food was then placed in a Boston restaurant for testing. Finally, the first commercial-based microwave oven appeared on the market in 1947. Today, over 200 million are offering hot or warmed food to households around the world.

It is true that the microwave oven was born by accident. But not completely, maybe. Besides Spencer's curiosity and love of knowledge, an unexpected side of him may have led to his discovery. According to his grandson, Percy Spencer loved nature and small animals. Especially he cherished his little friends; the squirrels. So, he always kept a peanut cluster bar in his pocket to feed his friends anytime. What aroused his curiosity may be the fact that a peanut cluster bar, which melts at a much higher temperature than snacks like a candy bar, melted in his pocket.

## The man who promised warm meals

### The Life of Percy Spencer

Period	Events
Before starting to work for Raytheon	Spencer was born in Maine in 1984. ↓ 32 ↓ 33
At Raytheon	34 ↓ 35 ↓ 36

### Traits that led Percy Spencer to be successful

37

### Historical Moment

Spencer experienced a strange phenomenon during his study.

"A sticky mess" was the moment when 38.

### Dawn of the microwave oven

▲ The great discovery was partly brought by 39.

→ Seemingly unrelated matters can lead to discovery.

問1 Members of your group listed important events in Percy Spencer's life.

Put the following events into the boxes 32 ~ 36.

- ① Spencer achieved success in radar development.
- ② Spencer created the base of the microwave oven.
- ③ Spencer found that microwaves could be used to heat food.
- ④ Spencer studied electricity to install electrical systems.
- ⑤ Spencer studied science related to radio technology.

問2 Choose the best combination to complete the poster. 37

- A. Spencer had a strong desire to learn new things since his childhood.
- B. Spencer learned knowledge necessary for his jobs by himself.
- C. Spencer liked cooking and making sweets.
- D. Spencer showed interest in science and nature in school.
- E. Spencer worked to make his jobs efficient.

- |              |           |           |
|--------------|-----------|-----------|
| ① A, B       | ② A, B, E | ③ A, D    |
| ④ B, C, D, E | ⑤ B, D, E | ⑥ C, D, E |

問3 Choose the best statement to complete the poster. 38

- ① he had his colleague splattered with an egg
- ② he messed up his laboratory with popcorn
- ③ he noticed the snack melting in his pocket
- ④ he revealed the secret of food heated by the microwave

問4 Choose the best statement to complete the poster.

39

- ① Spencer's affection for small animals
- ② Spencer's cooperative colleague
- ③ Spencer's inborn patience
- ④ Spencer's love for candy bars

第6問 (配点 25)

A You are going to make a presentation in class about the bicycle, or bike, and found the following article. You are making a presentation poster and preparing for the presentation based on the article.

### **The bike—one of the greatest inventions in history**

Children and adults around the world use bikes for many purposes: for exercise, for races, for fun, or as a means of transportation. Bikes as we know them evolved in the 19th century thanks to the efforts of several different inventors. The first "bike" is believed to have been created in 1817 in Germany. It consisted of a frame and two small wheels. It had no pedals or brakes. Riders had to push their feet against the ground to move themselves forward. This machine was called a "fast feet." Because of its simple mechanism, a fast feet was easy to build, but was restricted to paved areas and not practical enough to travel to distant places.

In the 1870s, a French inventor made an improvement to the bikes' design. It was to incorporate one large front wheel and one small rear wheel. The front wheel could be nearly twice as tall as a person! This bike was called a "penny-farthing." The name came from two coins: the penny and the farthing. The former was far larger than the latter. A rider pushed two pedals attached to the front wheel in the same way young children today pedal their tricycle, or a three-wheeled bike.

The bigger front wheel of the penny-farthing allowed riders to move faster, as one push of the pedal gave them a greater driving force compared with smaller wheels. In addition, a large wheel made the ride smoother, allowing a rider to roll over rocks and holes in the road. This strangely shaped machine became popular during the 1870s and 1880s, and helped establish the first bike clubs and bike races. However, the penny-farthing wasn't safe. With an extremely large front wheel, the riders often lost their balance and fell. Also, it was difficult to get on and off because the seat was attached near the top of the front wheel.