

英 語
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各大問の英文を読み，解答番号 **1** ～ **25** にあてはまるものとして最も適切な選択肢を選びなさい。

## 第 1 問

**NGK: Magazine Interviewer**

**Tim: Tim Peake, Astronaut**

NGK: Hi Tim! What does <sup>\*1</sup>blastoff feel like? Is it scary?

Tim: Launch is honestly the most exciting thing ever! By the time you get to sit at the top of a rocket you've been training for six years and have dealt with all your fear, so you're just bursting to get going. There's this immense power underneath you and, as the rocket lifts off, the feeling of <sup>\*2</sup>acceleration and the noise are unbelievable!

NGK: How long did it take you to reach the International Space Station (ISS)?

Tim: After just 8 minutes 48 seconds we reach 200km (space starts at 100km) — and go into orbit around Earth. There's an amazing sensation as everything calms down and goes quiet, and you experience weightlessness. The craft then has to get up to 400km, where the ISS is in orbit, and dock. This takes about six hours, and four orbits of the planet.

NGK: How did the other astronauts greet you when you arrived at the ISS?

Tim: It's such a warm feeling when you meet your crew mates again — we all trained together down on the ground so we know each other very well. When we first arrive there are lots of jobs to do — unpacking, putting vital cargo in the freezers and fridges, and a press conference. But then there's a moment where that all stops, the cameras are switched off and all six of us just go and have dinner in the Russian segment — that's when it's a bit of a party!

NGK: What was the first thing you ate in space?

Tim: My commander had put a bacon \*<sup>3</sup>sarnie in the food warmer for me while we were waiting to board!

NGK: Yum! Did you wash it down with a nice cup of tea?

Tim: I wouldn't say nice! Tea comes in foil \*<sup>4</sup>pouches with creamer and sugar inside. You add hot water and it goes through various stages — it's very weak and hot to begin with, half-way through it's alright, and at the end you're basically sucking on a tea bag!

NGK: Ew! What's it like to see the Earth from space?

Tim: What really strikes you is what a beautiful planet it is! First you notice the blues and greens, and the orange of the deserts. And the longer you're up there, the more detail you start to pick out — glaciers, volcanoes and mountain ranges. In the daytime, you don't see any signs of human \*<sup>5</sup>habitation, but at night the lights of towns and cities come on and it's exactly the opposite.

[ Source: <https://www.natgeokids.com/ie/discover/science/space/tim-peake-interview/> ]

Notes: \*<sup>1</sup>blastoff 打ち上げ      \*<sup>2</sup>acceleration 加速      \*<sup>3</sup>sarnie サンドウィッチ  
\*<sup>4</sup>pouch 小袋      \*<sup>5</sup>habitation 居住

問 1 What did Tim find remarkable about the launch? 1

- a The liftoff and flying
- b The sound and speed
- c The training and fear
- d The sitting and waiting

問 2 How long did it take to reach the space station? 2

- a 8 minutes and 48 seconds
- b 64 hours
- c The time to circle the Earth 4 times
- d The time to travel 200 kilometers

問 3 What did the astronauts in the space station do first when Tim arrived? 3

- a They worked.
- b They ate dinner.
- c They had a party.
- d They switched off the cameras.

問 4 Why did his crew mates greet him warmly? 4

- a Because the space station crew felt bored.
- b Because the crew mates were very lonely.
- c Because they already knew one another.
- d Because they needed more help for lots of work.

問 5 How did the astronauts drink tea? 5

- a By using lightweight cups
- b By using water bottles
- c By drinking with straws
- d By drinking from small bags

**問 6** What does Tim suggest is the most impressive thing about being onboard the space station? 6

- a** The speed with which the station orbits Earth
- b** No sound on the space station
- c** The view of Earth from the space station
- d** The loud sound of the rocket

## 第2問

Ever since gunpowder was first used to fire bullets, people have tried to find some way to protect themselves from these deadly <sup>\*1</sup>projectiles. The invention of Kevlar made that desire a reality. Nowadays, soldiers and police officers routinely wear bulletproof vests. Presidents and other heads of state will often be driven around in bulletproof cars made with Kevlar. This incredibly tough material is also used for aircraft parts, space vehicles, building materials, tires, all kinds of protective clothing, and in over two hundred other products. It is difficult to estimate the number of people's lives that have been saved by Kevlar, but it probably runs into the thousands.

The woman behind the discovery of this amazing material was an American, Stephanie Kwolek. She was born to Polish <sup>\*2</sup>immigrants in Pennsylvania in 1923. Her father was a keen naturalist, and although he died when Kwolek was quite young, he gave her a lifelong interest in science. Her interest in fabrics came from her mother.

Kwolek wanted to be a doctor when she was young. After graduating from university with a degree in chemistry, she began to look for work to help pay for medical school. This was in the mid-1940's, when many men had still not returned home from World War II. This meant that Kwolek was able to get a position working for the DuPont Company. DuPont was heavily involved in the research and development of <sup>\*3</sup>synthetic fibres, that is, fibres that have been made by chemical synthesis. Indeed, DuPont had recently been responsible for the creation of nylon. Kwolek enjoyed her work with DuPont so much that she decided to abandon her dream of becoming a doctor and stick with the company.

In the early 1960's, the U.S. was facing a gasoline shortage, and Kwolek and her team were tasked with trying to create a lightweight but strong fibre to be used for tires. Kwolek experimented with polymers: large molecules that are made from binding smaller units together. These can be made into fabrics or plastics. One day, she came up with a polymer solution that was much thinner than usual. Further work on the substance revealed it to be a very strong, stiff, lightweight material. In fact, it was five

times stronger than steel.

DuPont immediately saw the potential for this new material, and further research was conducted. In 1971, Kevlar was introduced. Kwolek was not involved in the development of Kevlar as a commercial product and did not receive any <sup>\*4</sup>royalties for her discovery, as she signed over the patent to DuPont. She did, however, continue to work on strengthening the product she had discovered. Kwolek received many awards and distinctions for her work, and in 1995, she was added to the National Inventors Hall of Fame, only the fourth woman to join this list. Kwolek continued working for DuPont until her retirement, and afterwards was actively involved in teaching and research. She died, aged 90, in 2014.

[ Source: Graham, Philip Zamrej, et al. *Eureka!* ]

Notes: <sup>\*1</sup>projectile 発射体      <sup>\*2</sup>immigrant 移民  
<sup>\*3</sup>synthetic 合成の      <sup>\*4</sup>royalty 特許権使用料

問 1 What is Kevlar? 7

- a It is used for gunpowder.
- b It protects people from fires.
- c It keeps deadly bullets in their shape.
- d It keeps people safe from harm.

問 2 What was Stephanie Kwolek's background? 8

- a She was from Poland.
- b She lost her parents at a young age.
- c Her mother was interested in cloth.
- d Her father was a famous scientist.

問 3 Why was Kwolek able to get a job at DuPont? 9

- a Because she was an expert on fibres.
- b Because she had less competition from men due to the circumstances.
- c Because she enjoyed working so much that they hired her.
- d Because she was expected to become the company doctor.

問 4 What is Kevlar made from? 10

- a Polymers
- b Steel
- c Nylon
- d Fabric

問 5 How could Kwolek be described? 11

- a She was a hard worker who was very devoted to science.
- b She made a great invention and became popular for it.
- c She worked very hard to make DuPont into a big and powerful company.
- d She had to work all of her life until she died at the age of 90.

問 6 What can be said was most meaningful to Kwolek? 12

- a Profits from her products were.
- b Patents from her inventions were.
- c Kevlar's lifesaving properties were.
- d The pursuit of science was.

### 第3問

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## 第 4 問

With globalization bringing people everywhere closer together, what happens on the other side of the world directly affects us. In early April 2009, swine <sup>\*1</sup>flu outbreaks were first reported in the Latin America region, and then, at astonishing speed, this new flu virus spread throughout the world. Two months later, it had spread to 76 countries, resulting in nearly 36,000 confirmed cases and 163 deaths. The WHO declared that this <sup>\*2</sup>virulent new strain had become a full-blown pandemic and on June 11, 2009, raised the level of pandemic alert to Phase 6, setting off a mini-panic around the globe.

This outbreak showed us just how rapidly viruses can evolve and spread thanks to their ability to constantly change their genetic make-up and jump from host to host. This latest virus, novel influenza A (H1N1), appears to be a complex mosaic made up of a wild-bird form of flu, a human type, and a strain found in pigs. The fact is, our immune system is simply not prepared to cope with such viruses. To make matters worse, these “flu bugs” move through the air and are highly <sup>\*3</sup>contagious. And the increasing populations of our cities and the rise in global air travel mean that infectious diseases can quickly spread from country to country. While medical experts are endeavoring to develop new vaccines and drugs, catching up with these swiftly evolving, fast-moving viruses is no easy task.

Perhaps we cannot prevent outbreaks, but we must do all we can to stop them. One thing we can do is to turn globalization to our advantage and set up reliable international disease-surveillance and warning systems. Institutes like WHO and Centers for Disease Control and Prevention (CDC) are already working toward this goal, issuing warnings and providing fast, accurate information.

At the personal level we can also do something to share the responsibility of stopping the spread of disease. We must always take the appropriate action based on the information we are given. Basic hygiene, like regular hand-washing and covering our mouths when we cough, may still be our most effective line of defense against these tricky viruses. And, of course, we have to make sure we get our flu shots, since

vaccination is generally the best and most cost-effective means of protection.

The key to victory in this ongoing battle is to see viruses not only as a threat but also as an opportunity — a chance to promote closer global ties and cooperation, to open the way for exciting medical breakthroughs, and to foster a deeper commitment to improving the quality of life for people everywhere. Remember: we are all in this together.

[ Source: Onjohji, Yasuko, et al. *Quality of Life* ]

Notes: \*<sup>1</sup>flu インフルエンザ      \*<sup>2</sup>virulent 毒性の強い      \*<sup>3</sup>contagious 伝染する

問 1 What does the writer say about globalization? 20

- a The writer says that we are more likely to affect one another than before.
- b The writer says that it is easier for us to visit one another than before.
- c The writer says that the earth has become smaller than before.
- d The writer says that people have begun to live closer to one another than before.

問 2 When did swine flu spread to more than 70 countries of the world? 21

- a In April of 2009
- b In July of 2009
- c In June of 2009
- d In August of 2009

問 3 Why do viruses spread so rapidly throughout the world? 22

- a Because they change their genetic structure easily.
- b Because they are made up of a mixture of wild bird, human and pig genes.
- c Because they are willing to attack human beings.
- d Because they have the ability to get stronger in the air.

問 4 What is the mission of the WHO and the CDC? 23

- a Giving warnings and precise information
- b Monitoring warning systems
- c Developing new vaccines and drugs
- d Promoting vaccination

問 5 What does the writer suggest is the best way to stop the spread of disease? 24

- a Washing our hands
- b Covering our mouths when we cough
- c Studying the appropriate information
- d Receiving vaccines

問 6 How can viruses be regarded as an opportunity? 25

- a Globalization can be fully realized.
- b Medicine can solve problems more effectively.
- c The quality of life of everyone can naturally improve.
- d We can eliminate dangerous threats worldwide.