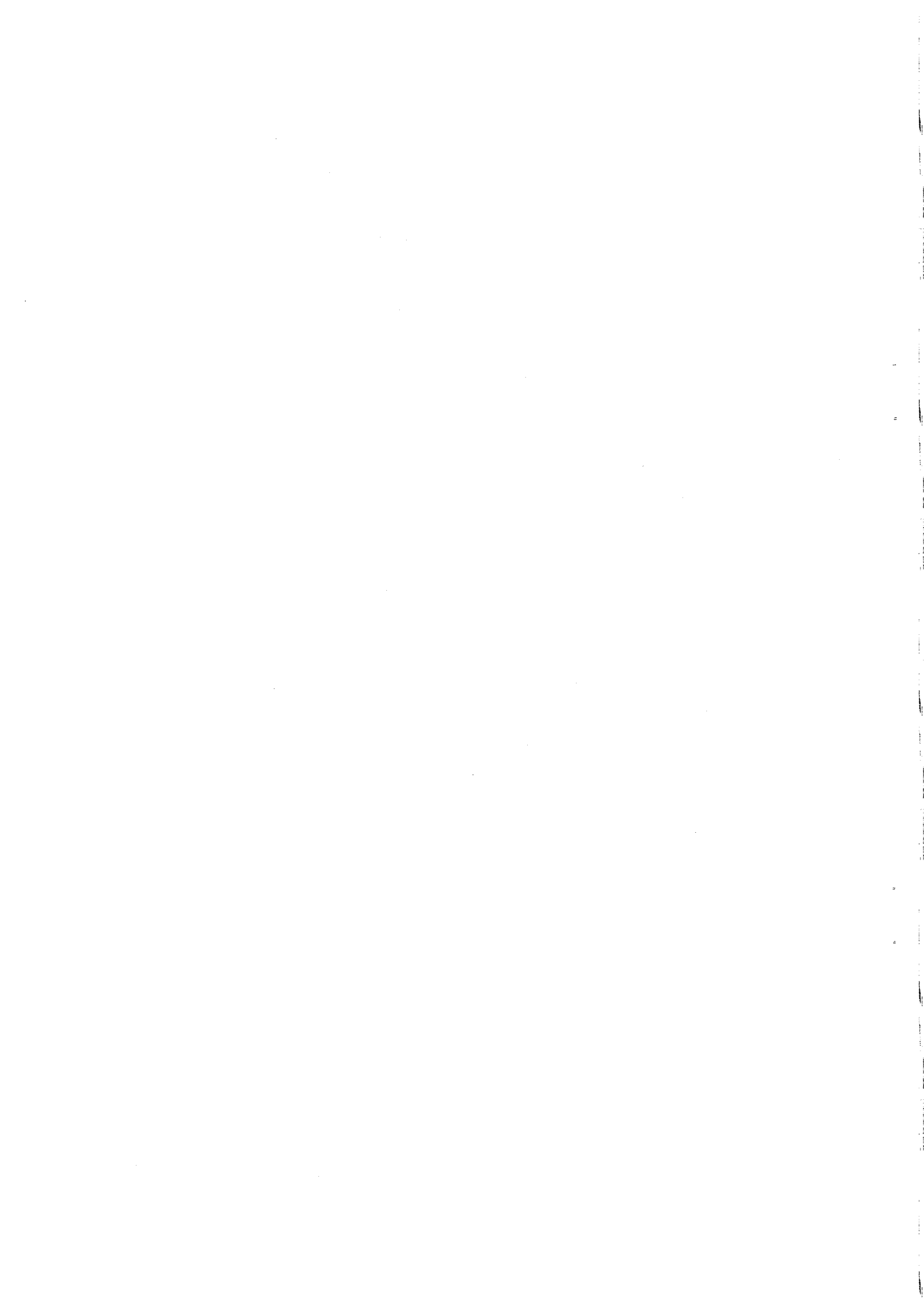


2020年度入学試験問題

英 語

(試験時間 10:30~11:50 80分)

1. 解答用紙は、マーク解答用紙のみです。
2. 解答は、必ず解答欄にマークしてください。解答欄以外にマークすると無効となります。
3. 解答は、HBの鉛筆またはシャープペンシルを使用し、訂正する場合は、プラスチック製の消しゴムを使用してください。解答用紙には鉛筆のあとや消しくずを残さないでください。
4. 解答用紙を折り曲げたり、汚したりしないでください。
5. 解答用紙には、必ず受験番号と氏名を記入およびマークしてください。
6. 解答用紙への受験番号の記入およびマークは、コンピュータ処理上非常に重要なので、誤記のないようにしてください。
7. 一度記入したマークを修正する場合、しっかりと消してください。消し残しがあると、マーク読み取り装置が反応して解答が無効となることがあります。



I 次の英文を読み、設問に答えなさい（*印の語は〔注〕を参照しなさい）。（34点）

Teenagers might be regarded as always playing on their smart phones and staying in bed till late in the morning, but there are some that don't fit this pattern. A new generation of talented teenagers is solving the problems of today with ambitious, ground-breaking technology. Here are the stories of four incredible young people who are already reshaping the world we live in.

From New Orleans in the United States, Keiana Cavé's journey of invention [1] with the Deepwater Horizon oil spill, which occurred in the Gulf of Mexico in 2010. It led to the largest *oil slick in human history, consisting of 780,000 cubic meters of oil in one of the most environmentally important bodies of water on the planet. In the immediate aftermath of the disaster, baby dolphins began dying at six times the usual rate, while fishermen and scientists reported large numbers of *deformed sea creatures, including shrimp with missing eyes and fish with unusual wounds on their bodies.

Watching the news on the television, Cavé instantly felt there must be some hidden environmental damage. She decided to focus her attention on discovering what was really going on. At 15, the teenager began studying what happens to oil when it's left on the ocean's surface, and discovered that when it's hit by UV rays from the sun, it reacts to form chemicals that can cause cancer. Today she's turned her work into two scientific papers and two patents for chemical methods of detecting the cancer-causing chemicals. She's also launched a start-up company, Mare, which is working toward a way to break them up so that they aren't as damaging. Her research has just received \$1.2 million in funding.

When Rifath Shaarook from India was a child, he would spend hours staring through the lens of a telescope with his dad. Sadly Mohamed Farook, a local professor and scientist, passed away when his son was in primary school. But Shaarook's passion for space lived on. As a young teenager he joined Space Kidz India, an organization aimed at nurturing young people with a passion for

technology. He formed a six-person team and dedicated the next four years to making a satellite, under the guidance of the organization's founder and director.

Every night, the teenagers would discuss their plans on video calls, often until 4:30 in the morning. Eventually they invented KalamSat: the lightest satellite in the world. At just 64 grams, it weighs about as much as a large battery. It's basically a 3.8 cm-wide cube made from 3D-printed plastic, strengthened with carbon fibers. It contains several different kinds of sensors, including those used to measure temperature, magnetism, height, and the condition of the structure as it flies through space. It also has its own power source and a small computer, to turn on all the sensors at the right moment and store their data.

The plan was to get KalamSat into orbit to test the performance of the strengthened plastic in space. Lightweight materials that can withstand the challenge of space travel are extremely useful, since it costs around \$10,000 to launch just 450 grams of any substance into space. After reaching its destination, it would spend just 12 minutes collecting data, before falling back down to Earth and landing in the sea. With many scientists eager to see how the plastic was affected by the flight, the device was successfully launched at NASA's facility in Virginia in June 2017.

Hannah Herbst from Florida in the United States was inspired to invent at the age of 15 by her 9 year-old pen pal, who lives in Ethiopia and did not have access to lights. This is surprisingly common: there are 1.3 billion people alive [2] electricity. So this student came up with BEACON (Bringing Electricity Access to Countries through Ocean Energy), which captures energy directly from ocean waves. Herbst's thinking was that populations tend to live around bodies of water; about 40% of the world's population lives within 100 km of the coast and only 10% lives further than 10 km away from a source of fresh water, such as a river or lake.

Her technology consists of a hollow plastic tube, with a propeller at one end and a *hydroelectric generator at the other. As tidal energy drives the propeller, it's converted into electricity by the generator. In one hour, Herbst has calculated

that it could charge the equivalent of three car batteries at the same time. She suggests that the energy generated could be used to power technologies for cleaning water or for equipment in hospitals in the developing world. The invention has won many awards, and the teenager is currently studying computer engineering at university while she completes high school.

Julian Cantu's invention is aimed at protecting women from breast cancer. He formed a company called Higia Technologies with three friends, which is developing a device that can detect early signs of cancer, a key factor in treating the disease successfully. Attached to normal clothing, it can look for changes in skin condition and temperature, which are among known signs of the disease. The data from the device is sent to the company's app, which uses AI to calculate a person's risk. The device still [3] more testing and is far from being ready to go into production. Similar technologies have proved unreliable in the past. However, if the project succeeds, it could help to save millions of lives.

Today's teenage inventors are part of a long tradition. In fact, many of the world's greatest geniuses started young, coming up with inventions like television, telephones and calculators before they reached their 20th birthdays. It's never too early to start changing the world.

* [注] oil slick 油まみれ・油の膜 deformed 奇形の
hydroelectric generator 水力発電機

設 問

1. 下線部(ア)～(オ)が指すものをA～Dよりそれぞれ1つ選び、その記号をマークしなさい。

(ア) some

A. smart phones

B. problems of today

C. teenagers

D. stories

3. 次の1～4の問いの答えとして最も適当なものをA～Dよりそれぞれ1つ選び、その記号をマークしなさい。

1. What news made Cavé believe there was some hidden environmental damage from the Deepwater Horizon oil spill?

- A. It was the largest oil slick in human history.
- B. It took place in an environmentally important body of water.
- C. There were unusual deaths and deformities among sea creatures in the area.
- D. The oil was left on the ocean's surface.

2. Why are the results of the KalamSat space flight scientifically important?

- A. The satellite was made by teenagers.
- B. The material which the satellite is made of may be useful for other objects sent to space.
- C. The satellite contains sensors that can measure things like temperature, magnetism and height.
- D. The satellite can spend as long as 12 minutes collecting data before falling back to Earth.

3. Why is it important for BEACON that people tend to live close to bodies of water?

- A. It converts energy from ocean waves into electricity.
- B. Many people near the ocean do not have access to electricity.
- C. About 40% of the world's population lives within 100 km of the coast.
- D. It is more important for them to generate electricity than to collect fresh water.

4. What is the potential advantage of the device being developed by Higia Technologies?

- A. It uses a smart phone app so it is cheap and easy to set up.
- B. AI is smarter than human beings in detecting diseases like cancer.
- C. The developers are young so they will surely be able to save millions of lives when their device goes into production.
- D. Worn in clothing, it may be able to find signs of cancer early.

4. 次のA～Gの英文で、本文の内容に一致しているものを2つだけ選び、その記号をマークしなさい。

- A. Baby dolphins began dying after the Deepwater Horizon oil spill when they were burned by powerful UV rays from the sun.
- B. Cavé's start-up company is already making profits of \$1.2 million a year.
- C. Mohamed Farook helped Rifath Shaarook by founding an organization called Space Kidz India, which helped to guide the project.
- D. It took six teenagers in India four years and a lot of hard work to create the lightest satellite in the world.
- E. Probably the main use for BEACON will be charging car batteries for people living near water.
- F. After finishing high school, Hannah Herbst began studying computer engineering at university.
- G. With technologies like the one invented by Julian Cantu not having always worked in the past, it may be a long time before his device is ready to be manufactured.

Ⅱ 次の1～10の英文の空所に入る最も適当なものをA～Dよりそれぞれ1つ選び、その記号をマークしなさい。(10点)

1. I'm afraid I cannot make myself () in German.
A. understanding B. understood
C. to understand D. understand

2. The latest version of the software has support for this issue () older versions do not.
A. neither B. either C. while D. so

3. () the lakes in the world, this lake has the greatest number of islands.
A. Most of B. Of all C. All of D. All

4. () in plain language, the book serves as a guide to beginners.
A. To write B. Writing
C. Having written D. Written

5. What do you suppose () the old man bought at the store?
A. that B. to C. by D. when

6. Venice is known () its beautiful alleys, canals, bridges, and churches.
A. by B. for C. in D. with

7. Because none of the project members would be available on the weekend, Mr. Smith decided to meet with participants ().
A. myself B. him C. himself D. them

8. The career advisor shared with the students a few tips on how () by a successful company.
- A. accept B. accepted C. to accept D. to be accepted
9. Technological advancements have made () for people to live and work comfortably.
- A. it is possible B. possibly C. possible D. it possible
10. The use of appliances such as washing machines and robot vacuums in homes, (), and factories saves the amount of time we spend on chores.
- A. offices B. in offices C. at an office D. used in office

Ⅲ 次の1～10の英文の空所に入る最も適当なものをA～Dよりそれぞれ1つ選び、その記号をマークしなさい。(10点)

1. The government has yet to decide how to more effectively () to the global warming problem.
A. respond B. manage C. close D. walk
2. Thanks to his advice, my test score () 95 from 80 a month earlier.
A. expanded B. rose to C. raised D. increased
3. I was so shocked to hear that I had failed, and I had difficulty hiding my ().
A. management B. adjustment C. judgment D. disappointment
4. Liz led her project team to a huge success and she is now the () of the company's finance section.
A. responsibility B. head C. front D. charge
5. I am traveling now and may not be able to reply to your email immediately. () emergency, please call my mobile phone.
A. In case of B. While C. On D. For
6. The accident at the construction site will lead them to () the current safety rules.
A. influence B. create C. prove D. review
7. It took Tom a while to make a full () from the operation.
A. charge B. gain C. recovery D. success

8. This part-time job is open to all, () age or previous experience.
A. except for B. regardless of C. whether D. before
9. The technological advance has resulted in () profits in our business.
A. growing B. helping C. selecting D. representing
10. To () an international call, dial "0" and enter the number you want to reach.
A. put B. create C. land D. make

IV 次のA～Lに示された1と2の英文の組み合わせのうち、1の文で説明されている内容から判断して2の文の内容が妥当と考えられるものを4つだけ選び、その記号をマークしなさい。例を参照のこと。(12点)

(例) 1 : I'm 18 years old and Takeshi is 10 years old.

2 : I'm much older than Takeshi. (妥当) / I'm a little younger than

Takeshi. (誤っている)

A. 1 : Even after asking for directions, the hotel was hardly easy for me to find.

2 : Once someone had told me how to get there, I was able to find the hotel without difficulty.

B. 1 : It was a shame I couldn't afford to buy the watch I wanted.

2 : The watch that I bought was not worth the money I paid for it.

C. 1 : The waiter left the menu on the table in case the man changed his mind about not ordering another dish.

2 : Although the man said he didn't want another dish, the waiter left him with the menu just in case.

D. 1 : We'd better hurry if we still want to catch the 9 am train.

2 : Even if we rush, we won't be on time for the train at 9 am.

E. 1 : If I had concentrated more, I could have passed that exam easily.

2 : The exam was so easy for me to pass that I did not even have to concentrate.

- F. 1 : No matter what we did, we couldn't seem to come up with a solution to the problem.
2 : After a long time, we finally solved the problem thanks to all the efforts we made.
- G. 1 : Instead of taking the train, it would be quicker if we took a taxi to the stadium.
2 : The taxi is not likely to be as quick as the train for getting to the stadium.
- H. 1 : I seldom find time to play tennis anymore now that I have started to work.
2 : Before I started my job, I used to have more opportunities to play tennis.
- I. 1 : Even though it was hard, I don't think you'll regret having given up smoking.
2 : You should think about quitting smoking even if it's difficult.
- J. 1 : This lake is one of the most beautiful in the world.
2 : There are no lakes as beautiful as this one in the world.
- K. 1 : He is the last person I want to vote for after what he said yesterday.
2 : I don't want to vote for him because of the things he said yesterday.
- L. 1 : Rising sea levels are thought to be one consequence of global warming.
2 : One of the effects of increasing global temperatures is believed to be a rise in sea levels.

V 次の設問1, 2に答えなさい。(20点)

設 問

1. 次の英文を読み, 本文の空所 [1] ~ [5] に入る最も適当なものを A~Dよりそれぞれ1つ選び, その記号をマークしなさい。

NEW TOYOTA INVESTMENT

Toyota is creating a \$100 million fund to invest in self-driving technology start-up companies, the automobile firm announced yesterday. Toyota AI Ventures, a Silicon Valley-based partner of Toyota, plans to put the money into small companies that are aiming at [1] new kinds of technologies in those fields. The company said the fund is part of Toyota's mission to help 'discover what's next' for Japan's biggest automaker. Toyota's AI venture fund has already invested in 19 different start-ups over the last two years, [2] its total investment in self-driving technology firms to \$200 million. At the 2018 Consumer Electronics Show, Toyota also unveiled a self-driving concept food-delivery vehicle [3] the e-Palette. The e-Palette was part of a partnership with Amazon to help Amazon explore ways to use self-driving cars for food delivery. Entering the autonomous vehicle market has been a goal for many automakers, [4] companies including Ford, Daimler and BMW all looking to innovate in self-driving vehicles. [5]. BMW and Daimler also said that they are working together to make them a reality within the next year or so.

1. A. develop B. developed C. developing D. development
2. A. bringing B. brought C. bring D. has brought
3. A. called B. call C. calling D. has called
4. A. for B. with C. by D. so
5. A. Toyota is determined to use self-driving technology for the food delivery business
- B. Amazon will be an essential partner for the companies' plans for innovation
- C. Self-driving technology is considered to be the future of the automobile industry
- D. Ford said it aims to have self-driving vehicles on the road by the end of 2019

2. 次の英文を読み、本文の空所 [1] ~ [5] に入る最も適当なものを A~D よりそれぞれ1つ選び、その記号をマークしなさい。

From: Raymond Fox <raymond.fox@enterpriseconstruction.com>
To: Lucy Adams <lucyadams@empire.com>
Subject: Project update

Dear Ms. Adams,

With reference to your last email regarding our current progress with the Empire Hotel construction project, I would like to give you the [1] updates about our current situation:

Having successfully [2] the first stage of the project last week, we are now preparing to begin stage two. On the whole, we are pleased with the progress we have made so far. The foundations for the hotel have been laid and we are almost ready to begin construction of the building itself.

As you may be aware, there have been [3] minor issues with the delivery of certain construction materials to the site. The problem was caused by a software fault with our major supplier, which caused our order to be delayed in their system. Our supplier has assured us that the problem has been resolved and that future deliveries [4] not be affected. We do not anticipate the delay to have any impact on our construction schedule.

With regards to your request to make alterations to the layout of the ground floor lobby area, may I suggest that we discuss this matter at the next project update meeting? I hope that this answers your major questions. If you require any further assistance, [5].

Yours sincerely,

Raymond Fox

Enterprise Construction Ltd., Project Manager

1. A. following B. followed C. as follows D. follow
2. A. complete B. completing C. completes D. completed
3. A. no B. a few C. one D. around
4. A. should B. have C. are D. to be
5. A. thank you for continuing to trust us with your project
- B. I will be happy to delay our next project update meeting
- C. please do not hesitate to contact me
- D. I would like to ask what kind of alterations to the lobby area you are thinking of

VI 次の英文を読み、本文の空所 [1] ~ [7] に入る最も適当なものをA~Gよりそれぞれ1つ選び、その記号をマークしなさい。ただし、同じものを繰り返して選ぶことはできない (*印の語は〔注〕を参照しなさい)。(14点)

A huge ice corridor has been discovered on Saturn's biggest moon, Titan. The ice streak was [1] much of the moon — making it over 4,000 miles in length. "This icy corridor is puzzling, because it doesn't fit with any surface features nor measurements of the subsurface," Caitlin Griffith, lead author of the study about the discovery, said in a statement. Titan is the only object in the solar system other than Earth that is [2]. But unlike our home planet, on Titan the rain is *methane, which fills the huge lakes that exist on the moon's surface. The source of methane on Titan is unclear, however. It is [3] comes from *evaporation at the polar lakes, but this does not account for most of what scientists observe. Finding out where the methane comes from is challenging, because the view of Titan's surface is [4] its thick atmosphere.

That changed, however, when NASA's Cassini spacecraft visited Saturn and its moons. Over the mission, Cassini flew over Titan many times, using various measurements — including radar and *infrared instruments — to give scientists a look at this unusual moon. Previously, it had been suggested that lakes beneath the moon's surface could be [5], with ice volcanoes pumping it into the atmosphere. Griffith, from the University of Arizona, and her team were [6] ice volcanoes by analyzing images from Cassini. Their method allowed them to look at weak surface features that could be [7] ice and organic materials. This is when they came across the ice corridor — findings of which were published in *Nature Astronomy*. Researchers say the presence of the ice corridor raises the question of whether volcanic processes were involved in its formation — however more research will be needed to understand this unusual feature.

*〔注〕 methane メタン evaporation 蒸発 infrared 赤外線の

- A. caused by
- B. found to stretch over
- C. known to have liquid rain
- D. looking for
- E. blocked by
- F. supplying the methane
- G. thought that some of it

(設問は前ページまで。以下、白紙)

