

2019 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）。(21点)

People have been enjoying chocolate as a food, drink and medicine for thousands of years. The ancient Maya and Aztecs called chocolate *kakaw* and used it as medicine. They also made chocolate offerings to their gods. Chocolate comes from the cacao tree, whose scientific name reflects the sweet's history. *Theobroma cacao* translates to 'cacao, food of the gods.'

Cacao is a tropical tree. And it's unusual in that its fruits, called pods, grow directly on the tree trunk. Inside the pod's flesh are large, brown seeds, and they are what hold the starting material for one of the world's tastiest treats. Those seeds, like the tree, are called cacao. After being harvested, they're heaped in piles or poured into boxes to *ferment. During this process, bacteria break down the flesh. As they digest its sugars and other chemicals, they give off heat which breaks down cells within the bean. This lets chemical reactions to produce the flavors we recognize in chocolate. After four to seven days, the seeds are laid in the sun to dry, after which they're ready to be roasted and ground to make cocoa. When cocoa is mashed into a thick brown paste, it's called chocolate liquor. Milk and dark chocolate both contain chocolate liquor.

The sweet confection we enjoy today is like the original forms of cocoa. The Maya mixed cocoa, water and chili pepper to make a spicy, bitter drink. It wasn't until Spanish explorers sent cocoa back to Europe that candy makers came up with our modern, sweet version of chocolate. The ancient Maya and Aztec people also mixed cacao seeds with various herbs to make medicines. They used these to treat symptoms such as fevers and coughs. Cacao has a long history as a medicine, but it is only recently that scientists have begun to investigate its benefits.

Cocoa contains *antioxidants*. These molecules stop chemical reactions involving *oxidation, which can damage the body's cells. DNA is especially vulnerable, and since damaged DNA can eventually lead to diseases such as cancer, antioxidants

are an ⁽³⁾_____ part of our diet. Many kinds of dark chocolate are high in antioxidants while milk chocolate and white chocolate are not.

Flavanols are another important group of cocoa compounds. *Arteries carry blood from the heart to organs and other tissues from head to foot. Flavanols can widen those arteries, helping to improve blood flow. Many studies have shown that cocoa products can keep blood pressure low and help improve various aspects of our health, thanks in part to the flavanols ⁽³⁾they contain. Improved blood flow helps the brain work better, since more blood reaching the brain means more energy for brain cells. Some research has found that learning and memory improve when people eat cocoa flavanols.

However, it must be remembered that not all chocolate contains these potentially beneficial compounds. Much of the chocolate sold today is ⁽⁴⁾_____ cocoa flavanols. "It is a common myth that dark chocolate has higher levels of cocoa flavanols than milk chocolate," says Susan Miszewski of Mars Symbioscience. While most chocolates do contain some of these flavanols, that amount varies a lot. The normal steps in harvesting a cocoa bean and processing it into a candy bar, including fermenting and roasting the seeds, destroy flavanols along the way. And there's another reason why it might not be a good idea to rush out and buy a box of chocolates for your health. Even chocolates that still contain flavanols are full of calories, sugar and fat, and ⁽⁵⁾they can easily outweigh any health benefits the world's favorite snack has to offer.

* [注] ferment 発酵する oxidation 酸化 arteries 動脈

設 問

1. 下線部(あ)の意味に最も近いものをA～Dより1つ選び、その記号をマークしなさい。

- A. The scientific name of cacao has a long history.
- B. The history of chocolate can be seen in cacao's scientific name.
- C. People have been considering the scientific name of cacao throughout history.
- D. Science has been an important part of chocolate during its history.

2. 下線部(い)～(え)の they 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。

(い) they

- A. cacao seeds
- B. chemical reactions
- C. sugars and other chemicals
- D. bacteria

(う) they

- A. cocoa products
- B. arteries
- C. various aspects of our health
- D. many studies

(え) they

- A. flavanols
- B. chocolates
- C. calories, sugar and fat
- D. candy bars

3. 本文の空所(1)～(4)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。

- (1) A. take out B. take part C. take place D. take up
(2) A. consumed B. nothing C. made D. just
(3) A. essential B. unhealthy C. unusual D. energetic
(4) A. manufactured from B. supplemented with
 C. full of D. low in

4. 本文の内容と一致するものを(ア)(イ)の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) A. The ancient Maya and Aztecs used chocolate only as offerings to their gods.
 B. The pods of a cacao tree hang down from its branches like fruits.
 C. Cocoa is made from dried cacao seeds that have been roasted and ground.
 D. The Maya taught Spanish explorers how to make sweet chocolate out of cocoa.
- (イ) A. Milk chocolate is just as high in antioxidants as dark chocolate.
 B. Blood pressure can be lowered thanks to the antioxidants in chocolate.
 C. It would be wrong to believe that dark chocolate contains more flavanols than milk chocolate.
 D. Candy bars have plenty of flavanols in them.

II 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）。(21点)

Some deserts can be very hot. During the daytime, temperatures can rise rapidly due to clear skies and high levels of sunshine. (あ) clouds mean that (い) deserts receive close to the maximum possible amount of radiation from the sun. In Egypt, for example, the average amount of sunshine hours is around 3,500 a year. In Tibet, the annual average is about 3,400 hours.

Consequently, desert interiors can experience air temperatures in excess of 40°C for many consecutive days. These conditions can be unpleasant for people and present ⁽¹⁾_____ to desert plants and animals. The title of 'hottest place on Earth' has been claimed by several locations, all of them in deserts. Death Valley, in California, USA, held the record for the highest recorded air temperature of 56.7°C from 1913 to 1922, but lost the world record in September 1922 when an air temperature of 58.0°C was recorded at El Azizia in northern Libya. Another place that often appears in *meteorological records is Dallol in the Danakil desert in Ethiopia. Dallol holds the record for the highest average annual air temperature of 34.5°C.

These records were measured at weather stations using standardized equipment with the temperature taken 1.5 metres above the ground surface. The thermometer is kept inside a wooden box — a Stevenson screen — to protect it from direct solar radiation and from reflected terrestrial radiation. The objective is to measure the temperature of the air circulating in the area, so the Stevenson screen has partly opened sides ⁽²⁾_____ air to pass freely over the instrument.

It is possible that hotter temperatures have occurred elsewhere in desert locations without instruments to record them. Generally, long-term meteorological data for many deserts are insufficient simply because of the *sparse populations that live in desert areas. Sensors carried on orbiting satellites have the advantage over fixed weather stations of being able to collect data with continuous geographical coverage. Attempts to locate the 'hottest place on Earth' using data

from satellites have focused on measuring temperature at the Earth's surface, which is typically ⁽³⁾_____ than the temperature of the air.

Global satellite-derived maps of the highest annual maximum land surface temperatures ⁽⁴⁾_____ the fact that this planet's hottest places are in dry, sparsely vegetated landscapes. Large parts of the Sahara, the Middle East, the Gobi, most of Australia, and large areas in western North America stand out as places where land surface temperatures regularly exceed 60°C. The highest land surface temperature documented by satellite was in the Lut desert in Iran, where 70.7°C was recorded in 2005. None the less, direct monitoring of ground surfaces has returned still greater temperatures. The temperature of a bare sand surface at Repetek, a desert research station in the Karakum in Turkmenistan, has been measured at 79.4°C. In the Red Sea hills, north of Port Sudan, a sand temperature of 83.5°C has been recorded.

* [注] meteorological 気象学上の sparse まばらな, 点在する

設 問

1. 本文の空所 (あ) (い) に入る組み合わせとして最も適当なものをA～Fより1つ選び, その記号をマークしなさい。

- | | | | |
|-------------|----------|-------------|----------|
| A. (あ) Rain | (い) many | B. (あ) Much | (い) many |
| C. (あ) Few | (い) many | D. (あ) Many | (い) few |
| E. (あ) Thin | (い) few | F. (あ) Many | (い) no |

2. 本文の空所(1)～(4)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。

- | | | | |
|------------------|----------------|----------------|--------------|
| (1) A. an access | B. a challenge | C. a breakdown | D. a failure |
| (2) A. to allow | B. to resist | C. to let | D. to keep |
| (3) A. cooler | B. lower | C. wetter | D. hotter |
| (4) A. become | B. confirm | C. disprove | D. prohibit |

3. 本文の内容と一致するように、次の英文(ア)~(エ)の空所に入る最も適切なものを A~D よりそれぞれ1つ選び、その記号をマークしなさい。

(ア) According to paragraph 2, Libya _____.

- A. had the highest average temperature ever recorded
- B. maintained a higher average temperature than Ethiopia
- C. held the 'highest air temperature' world record until 1922
- D. is one of several places that claim the title of 'hottest place on Earth'

(イ) According to paragraph 3, the Stevenson screen _____.

- A. protects solar radiation inside a wooden box
- B. measures the surface ground temperature
- C. keeps the thermometer away from radiation
- D. is kept inside a box made of wood

(ウ) According to paragraph 4, _____.

- A. less populated areas cannot provide hotter temperatures
- B. sensors in space record temperatures on Earth's surface
- C. satellites remain in fixed positions to cover more geographical area
- D. the satellite's disadvantage is that it measures meteorological data in the short term

(エ) According to paragraph 5, _____.

- A. direct monitoring has recorded the highest land temperatures
- B. a satellite has located a spot that is hotter than any place measured by direct monitoring
- C. satellites use direct monitoring for locating the highest surface temperature
- D. places like the Sahara and the Gobi have reached maximum temperatures of up to 60°C

4. 本文の内容と一致するように、次の英文の空所に入る最も適当なものをA～Dより1つ選び、その記号をマークしなさい。

The hottest world temperature was recorded _____.

- A. in Death Valley B. just above Earth's surface
C. in 1922 D. on a sand surface

Ⅲ 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)。(22点)

When a light goes out in your room, you ask, "How did that happen?" You might check to see if the lamp is plugged in or if the bulb is burned out, or you might look at homes in your neighborhood to see if there has been a power outage. When you think and act like this, you are searching for *cause-and-effect* relationships — trying to find out what events cause what results. This type of thinking is rational thinking, applied to the physical world. It is basic to science.

Today, we use rational thinking so much that it's hard to imagine other ways of interpreting our experiences. But it wasn't always this way. In other times and places, people relied heavily on *superstition and magic to interpret the world around them. They were unable to analyze the physical world in terms of physical causes and effects.

The ancient Greeks used logic and rational thought in a systematic way to investigate the world around them and make many scientific discoveries. They learned that Earth is round and determined its *circumference. They discovered why things float and suggested that the apparent motion of the stars throughout the night is due to the rotation of Earth. The ancient Greeks founded the science of botany — the systematic study and classification of plants — and even proposed an early version of the principle of natural selection. Such scientific breakthroughs, when applied as technology, greatly enhanced the quality of life in ancient Greece. For example, engineers applied principles articulated by Archimedes and others to construct an elaborate public waterworks, which brought fresh water into the towns and carried sewage away in a *sanitary manner.

When the Romans conquered ancient Greece, they adopted much of Greek culture, including the scientific mode of inquiry, and spread it throughout the Roman Empire. When the Roman Empire fell in the 5th century AD, advancements in science came to a halt in Europe. Nomadic tribes destroyed much in their paths as they conquered Europe and brought in the Dark Ages.

While religion held sway in Europe, science continued to advance in other parts of the world.

The Chinese and Polynesians were charting the stars and the planets. Arab nations developed mathematics and learned to make glass, paper, metals, and certain chemicals. Finally, during the 10th through 12th centuries, Islamic people brought the spirit of scientific inquiry back into Europe when they entered Spain. Then universities sprang up. When the printing press was invented by Johannes Gutenberg in the 15th century, science made a great leap forward. People were able to communicate easily with one another across great distances. The printing press did much to advance scientific thought, just as computers and the Internet are doing today.

Up until the 16th century, most people thought Earth was the center of the universe. They thought that the Sun circled the stationary Earth. This thinking was challenged when the Polish astronomer Nicolaus Copernicus quietly published a book proposing that the Sun is stationary, and Earth revolves around it. These ideas conflicted with the powerful institution of the Church and were banned for 200 years.

Modern science began in the 17th century, when the Italian physicist Galileo Galilei revived the Copernican view. Galileo used experiments, rather than speculation, to study nature's behavior. Galileo was arrested for popularizing the Copernican theory and for his other contributions to scientific thought. But, a century later, his ideas and those of Copernicus were accepted by most educated people.

Scientific discoveries are often opposed, especially if they conflict with what people want to believe. In the early 1800s, geologists were condemned because their findings differed from religious accounts of creation. Later in the same century, geology was accepted, but theories of evolution were condemned. Every age has had its intellectual rebels who have been persecuted, condemned, or suppressed but then later regarded as harmless and even essential to the

advancement of civilization and the elevation of the human condition.

* [注] superstition 迷信 circumference 円周 sanitary 衛生的な

設 問

1. 本文の内容と一致するように、次の英文(ア)~(オ)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。

(ア) According to paragraphs 1 and 2, _____.

- A. people in other times and places did not try to explain the world
- B. when you go out of your room, you should turn off your light
- C. you are using rational thinking when you check to see if neighborhood lights are also out
- D. an example of superstition is when you look to see if your light is on after a power outage

(イ) According to paragraph 3, _____.

- A. botany is the study of the stars, plants and floating things
- B. the ancient Greeks believed that our rotating planet explained why stars moved across the night skies
- C. an elaborately clean system allowed sewage into town while taking clean water out
- D. scientific breakthroughs hardly benefitted people in ancient Greece

- (ウ) According to paragraphs 4 and 5, _____.
- A. the Greeks adopted Roman culture after conquering them
 - B. scientific advancement continued to spread across Europe when nomadic tribes conquered Europe
 - C. the Dark Ages destroyed advances in science across the globe
 - D. what Gutenberg's invention did for Europe in the 1400s is equivalent to what computer networks do for us today
- (エ) According to paragraphs 6 and 7, _____.
- A. Copernicus suggested that Earth was orbited by the Sun
 - B. the Church's 16th century beliefs were banned for 200 years
 - C. Galileo was arrested for popularizing the theory that the Sun circled Earth
 - D. a majority of educated people eventually concluded that Copernicus was correct
- (オ) According to paragraph 8, _____.
- A. what we condemn as harmful, we might celebrate later as a breakthrough
 - B. religious ideas of creation strongly supported the findings of early geologists
 - C. you can be an intellectual rebel at any age because as you grow older you will be harmless
 - D. what people believe conflicts with what they want to believe

2. 本文の内容と一致するように、次の英文の空所（ア）～（カ）に入る最も適当なものをA～H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。

Long before the scientific mode of inquiry came (ア) Europe, (イ) the Greeks and later adopted by the Romans. But, Europe remained in the Dark Ages until (ウ) the spirit of scientific inquiry via Spain. Then, as universities sprang up across Europe, (エ) gave Copernicus' book a wider reading audience. Even so, his idea of (オ) went against the teachings of the Church. Not long after Galileo revived Copernicus' view, (カ) speculation.

- A. to a near stop across
- B. Chinese and Polynesians were charting
- C. rational thought was used systematically by
- D. the invention of the printing press
- E. the Church's 200-year ban
- F. modern science began when experimentation replaced
- G. the Sun being stationary
- H. the Islamic people reintroduced

IV 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）。（20点）

You won't find many sure things in a gambling city like Las Vegas, but here's a deal that counts as a win for everybody: The city has installed the world's first "smart streetlights" powered by human footsteps and the sun.

Every person walking across Boulder Plaza supplies power to illuminate the public square. Each step produces *kinetic energy that gets converted into electricity and stored in a battery that runs the system at night. A single step on a kinetic tile generates between four and eight watts of energy. If not enough pedestrians make the crossing to top up the batteries, it shouldn't be a problem. Each light pole is also topped with a solar panel, and sunshine is another rare safe bet in the desert city.

Together, walkers and the sun provide enough clean energy to brighten the plaza all night, but there's more — these are supposed to be "smart" lights after all. Each can multitask as a USB charging station and WiFi hotspot. The system also includes sensors that can transmit real-time data online to report on weather conditions or current usage or whatever.

Boulder Plaza is just a single square in the Arts District, eight kilometers away from the more famous entertainment Strip. But it marks a bold move for Las Vegas, which wants to be considered a leader in renewable energy. What begins with a single well-lit public space could take off to become a better way to charge and change the world.

The makers at EnGoPlanet hope so. The clean tech startup from New York believes streetlights can be a solution to the climate crisis. The bright idea was inspired by Hurricane Sandy, when half of Manhattan found itself without electricity for seven days. "The fact that one of the most important cities in the world did not have a proper alternative to provide its citizens with energy for their basic needs was *disconcerting," the company notes on its website.

Streetlights worldwide, according to EnGoPlanet CEO Petar Mirovic, cost over

\$40 billion in energy each year and produce more than 100 million tons of CO₂. Smart streetlights could reduce the greenhouse gas emissions involved in producing all that electricity while also bringing light to places around the world that lack urban infrastructure. Some 1.4 billion people lack any public lighting at all.

“Today they live in the dark,” said Mirovic. “That is why we started a crowd-funding campaign. We want to raise money for the project of installing our smart streetlights in 10 rural areas in Africa that don’t have access to electricity.”

Mobile technology has taken off in Africa. Cell phones keep people connected even in areas without urban infrastructure. But charging fees are costly. One study found Africans who must pay 25 cents each time end up spending 400 times what the typical American pays over a year to keep a phone charged.

* [注] kinetic 運動によって生じる disconcerting 当惑させる, 気がかりな

設 問

1. 本文の内容と一致するように、次の英文(アイ)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。

- (ア) When the number of walkers decreases to a level below what is necessary to recharge the batteries, _____.
- A. a problem occurs due to a lack of power
 - B. solar panels on the tops of poles can gather sunlight to keep them charged
 - C. operators can increase the efficiency of the tiles, thus producing more than eight watts per step
 - D. USB charging stations or WiFi hotspots can be switched on to provide more energy

- (イ) Not only can the streetlights light up the plaza, but they _____.
- A. are also very sensitive to bad weather conditions
 - B. can also direct users to far-off WiFi stations
 - C. also function as stations for recharging electronics
 - D. can also tell pedestrians how many steps they've taken

2. 本文の内容と一致するものを(ア)(イ)の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) A. The brightened Boulder Plaza is in the heart of the entertainment district.
- B. Las Vegas has become the leader in marking bold moves.
- C. Boulder Plaza might offer an improved way to provide energy.
- D. The Arts District is eight kilometers from Boulder Plaza.

- (イ) A. Smart streetlights are called "smart" because they can choose how to get their power.
- B. Boulder Plaza in Las Vegas illuminates its public square with power produced from two sources.
- C. Batteries are unnecessary for storing energy because Boulder Plaza has "smart" streetlights.
- D. Walkers, alone, generate enough energy to keep the square well-lit throughout the night.

V 次の1～5の英文の空所（ア）（イ）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. After returning to Japan from her study (ア), the first thing Masako did was (イ) her friends and neighbors.

- ア. A. outside B. abroad C. foreign D. international
イ. A. catch up with B. find out
 C. send out D. stand out with

2. We are too far away from the speaker. I can't (ア) what she is saying. Let's move ten rows (イ).

- ア. A. catch on B. make out C. add up D. sit through
イ. A. front B. close C. ahead D. back

3. I made my teacher angry when I (ア) for class twenty minutes (イ).

- ア. A. ran out B. left out C. picked up D. showed up
イ. A. after B. late C. over D. before

4. A: How did your daughter (ア) her surprise birthday party?

B: Our son informed his friend John, and she (イ) him talking on the phone.

- ア. A. set up for B. look forward to
 C. find out about D. come up with
イ. A. listened B. asked C. told D. overheard

5. A: My older sister (ア) us five younger siblings while our parents were away.

B: Wow! What a big family! So there are eight of you in (イ)?

ア. A. set out to

B. lived up to

C. made sure of

D. took care of

イ. A. full

B. addition

C. all

D. family

Ⅵ 次のA～Gに示されたアとイの英文の組み合わせのうち、アの文で説明されている内容から判断してイの文の内容が妥当と考えられるものを2つだけ選び、その記号をマークしなさい。例を参照のこと。(6点)

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

イ : I'm older than Takeshi. (妥当)/I'm younger than Takeshi. (妥当ではない)

A. ア : Finding a parking space there is usually easy during the week.

イ : That park tends to be less crowded on weekdays.

B. ア : Not only does smoking cause some diseases, but it also does harm to those around.

イ : Both smoking and people around smokers can be a cause of some diseases.

C. ア : Sally used to chat with her friends at this café when she was a college student.

イ : Since she became a college student, Sally has been visiting this café with friends.

D. ア : It's never too soon to start thinking about your future.

イ : You don't need to start thinking about your future yet.

E. ア : I hadn't met Richard in about ten years.

イ : I met Richard again after an interval of about ten years.

F. ア : The exam didn't go as well as I had expected.

イ : I didn't achieve the score on the exam that I thought I would.

G. ア : The train was due to arrive ten minutes ago.

イ : When I arrived at the station, the train had been there for ten minutes.

(設問は前ページまで。以下、白紙)

