解答はすべて解答用紙にマークしなさい。

〔I〕 次の 1 ～ 12 の英文の（　　）に入る最も適切な語句を，それぞれ下の①～④から一つずつ選びなさい。

1 Even though there is evidence of certain self-medication behaviors in animals, so far it (　　) observed that animals treat their wounds with healing plants.
① will never be　② was never　③ has never been　④ had never been

2 Shellfish growers in New Zealand do not need to feed their shellfish, because the coastal waters there are very rich (　　) phytoplankton.
① at　② for　③ in　④ to

3 (　　) some or all of the Sun's rays from reaching the Earth, a solar eclipse occurs when the Moon moves between the Earth and the Sun.
① Block　② Blocking　③ Blocked　④ To be blocking

4 The American Heart Association's ideal daily sodium limit is 1,500 milligrams for most adults, especially (　　) with high blood pressure.
① it　② this　③ these　④ those

5 According to research, one in (　　) six to seven people aged 65 or older will have some health problems.
① every　② each　③ either　④ other

6 The risk of cancer increases with age because we accumulate defects in our DNA and genome (　　) sometimes cause gene problems that can lead to cancer.
① which　② whose　③ why　④ what

7 A method has been discovered to treat water heavily ( ) with PFAS, or harmful forever chemicals.

① contaminate ② contaminated ③ contaminating ④ to contaminate

8 Video games had relatively little appeal in the early 1970s, ( ) that all changed when gaming took a massive leap forward near the end of the decade.

① but ② since ③ or ④ after

9 Engineers are developing technologies that have the potential ( ) fossil fuels and biomass into electricity without emitting carbon dioxide into the atmosphere.

① convert ② converts ③ converting ④ to convert

10 Whether in health care, sport, or a manufacturing industry, 3D printing allows 100% customized products to ( ) quickly and precisely.

① make ② be making ③ be made ④ have made

11 The Ministry of the Environment said that greenhouse gas emissions reported during the one-year period ending in March 2023 ( ) to the equivalent of 1.135 billion tons of carbon dioxide.

① amounts ② amounted ③ amounting ④ to amount

12 According to a paper published in 2019, a great number of deaths ( ) prevented had some bacterial infections been less resistant to drugs.

① were ② had been ③ would be ④ could have been

〔II〕 次の（1）～（5）の日本語の意味を表すように英文を作った場合，[13] ～ [27] に入る最も適切な語を，それぞれ下の①～⑦から一つずつ選びなさい。なお，文頭に入る語も小文字で示してある。

（1） 再生可能エネルギーの施設が劇的に増加しつつあるため，それをどのように鳥や他の野生生物にとって安全なものにするかという問題は，より差し迫ったものとなっている。

As renewable energy infrastructure is increasing dramatically, the question [ ] [13] [ ] [14] [ ] [15] [ ] birds and other wildlife is growing more urgent.

① safe ② make ③ for ④ to ⑤ how ⑥ it ⑦ of

（2） 科学者の推測では，地球の生命を脅かすほどの大きな隕石衝突は，数百万年に一度起こるとされている。

Scientists estimate that an asteroid [ ] [16] [ ] [17] [ ] [18] [ ] Earth likely occurs once every few million years.

① to ② large ③ on ④ collision ⑤ threaten ⑥ enough ⑦ life

（3） ソーシャルメディアの隆盛によって動画やコメントをインターネット上に投稿することが可能になり，自由な言論がどこまで許されるのかについて激しい論争を巻き起こしている。

The rise of social media has allowed people to post videos and written comments online, which has sparked intense [ ] [19] [ ] [20] [ ] [21] [ ] go.

① free ② debate ③ far ④ can ⑤ how ⑥ speech ⑦ over

（4） 政府の声明文は，2030年代前半までに，二酸化炭素の排出を削減するための対策を持たない石炭火力発電所の段階的な廃止を求めている。

The government's statement calls for the phasing out of coal-fired [ ] [22] [ ] [23] [ ] [24] [ ] CO_2 emissions by the first half of the 2030s.

① plants ② reduce ③ that ④ to ⑤ measures ⑥ power ⑦ lack

（5） プラスチックに起因する海洋汚染が世界的な関心事となり，日本では海水中で自然分解する画期的なプラスチックを作り出すことで，問題解決すべく研究が進められている。

[ ] [25] [ ] [26] [ ] [27] [ ] a global concern, research is underway in Japan to solve the problem by creating innovative plastic that breaks down in seawater.

① becoming ② caused ③ marine ④ plastics ⑤ by ⑥ pollution ⑦ with

〔III〕 次の 28 ～ 32 が自然な会話になるように，（　　）に入る最も適切なものを，それぞれ下の①～④から一つずつ選びなさい。

28 A: Excuse me. I am interested in getting a library card.
B: Sure, let me give you an application form. You can fill it out right here at the counter.
A: Great. Thank you.
B: Are you familiar with our rules and fines?
A: (　　)

① Yes, I'm fine with my family.
② Yes, I read your brochure.
③ No, I'm not sure how to make rules.
④ No, I don't think you can follow.

29 A: I think I may try to start eating a little better.
B: I changed my diet recently, too. I eat a lot more healthily now.
A: (　　)
B: My diet consists mainly of fruits, vegetables, and chicken.
A: That's it?
B: Pretty much.

① How do you like my diet?
② What do you eat these days?
③ What makes you overeat?
④ How come you changed it?

30 A: I hear you've taken up a new hobby, bread making. Is that right?
B: Yes! I really enjoy doing it on weekends.
A: How did you get into that?
B: Oh, I love bread, so I wanted to eat it fresh from the oven.
A: Is it difficult to make?
B: (　　) In fact, it's almost like going to the gym!

① Choosing ingredients is the most difficult part.
② Tasting is the most enjoyable moment in the process.
③ Baking is actually very easy with an oven.
④ Shaping bread dough is actually quite tiring.

31 A: Congratulations on your new job! How did you get it?

B: I saw the advertisement on the internet and applied.

A: How did the interview go? Were you nervous?

B: Yeah, I was pretty nervous. But I managed to get the job!

A: When do you start?

B: ( )

A: That's great. Good luck with everything!

B: Thank you!

① Well, I started yesterday, actually.

② They started the business in 1985.

③ I need to have one more interview.

④ We haven't agreed on the date yet.

32 A: Hi, what are you up to?

B: I'm looking for accommodation for my trip to London next month.

A: Nice. What websites are you using?

B: This one is called hotelsinlondon.com. I just enter the dates and the area I want to stay in, and it gives me a list of available hotels and their prices.

A: Have you found anywhere that you like?

B: Well, not really. ( )

① I don't have to wait for the suggestions from the site.

② We have found some hotels that meet our requests.

③ They are all either too expensive or too far away.

④ You often misunderstand information you get online.

〔IV〕 次の英文中の [33] に入る最も適切なものを下の ① ～ ④ から一つ選びなさい。

Cancer is a disease, or group of diseases, in which some cells multiply uncontrollably and can spread to other parts of the body. But that description does not reflect how our conception of cancer has changed, says Kenneth Pienta at Johns Hopkins University. "People used to view cancer as sort of bad luck: the cancer would just change over time and we didn't really understand why, or how, or what was driving those changes." In the past few years, however, Pienta and others have come to see cancers as akin to organisms themselves, existing in complex ecosystems alongside other cancer cells and the body's immune cells. Cancer cells compete with each other for access to nutrients, and only the fittest ones survive. "Cancer evolves in response to changes in its environment. [33]" says Pienta.

① It wouldn't survive if it didn't,
② It spreads to make bad luck,
③ It causes changes around it,
④ It gets nutrients when attacked,

〔V〕 下の英文 [34] が入る最も適切な位置を ① ～ ④ から一つ選びなさい。

Asian hornets are smaller than native European hornets, and pose no greater risk to human health. But their big appetites and predatory hunting behaviors are a threat to the U.K.'s honeybee colonies and native bee populations. ① The species first appeared in Europe in 2004, when they were spotted in France. ② Since then, its numbers have grown quickly on the continent, but it has so far been kept under control in the U.K. due to a policy of eradication by the National Bee Unit (NBU), a section of the government-run Animal and Plant Health Agency. ③ This involves encouraging the public to report any possible sightings, killing every Asian hornet found and destroying their nests. ④ DNA testing conducted by the NBU shows three queen hornets caught at Four Oaks in East Sussex are the offspring of a nest destroyed in Rye, East Sussex, in November 2023.

[34]

But the organization may be losing the fight to stop the species settling.

〔VI〕 次の英文中の [35] ～ [38] に，下の英文①～④を入れ，適切な文章にしなさい。

Rice is a global dietary staple. Almost half the world eats it regularly — sometimes every day. However, climate change has been making it harder to grow this crop. So Nandini Rastogi, 18, developed a way to make the plant more resilient to climate stress by altering its DNA. Stresses — including extreme hot and dry climates — trigger certain biological processes in rice plants. These turn on physical changes in the plant that help it survive. [35] [36] [37] [38] This innovation left the growth processes active, even when the plant was not stressed. Rastogi edited rice cells using a gene-editing tool called CRISPR.

① Rastogi decided to get rid of the genes that stopped the processes from turning on.
② It might also close the tiny holes in its leaves to hold onto what water it does have.
③ In a drought, for instance, a plant may make its roots longer in search of more water.
④ Most of the time, these growth-promoting processes are turned off.

〔VII〕 次の英文の内容に合致するものを下の ① ～ ④ から一つ選びなさい。

Lili Chen and her colleagues at the Huazhong University of Science and Technology in China analyzed how workout timing affected bone growth in 79 male mice and 35 female mice. All the mice were four weeks old, equivalent to about 11 years old in humans. The researchers divided the mice into seven similarly-sized groups. The first six groups exercised on a running wheel for 30 minutes a day, each at different times. The control group rested throughout each day.

After four weeks, the thigh bones of mice that exercised soon after waking up measured about three percent longer and 25 percent thicker than those that exercised closer to when they went to sleep. This suggests that morning movement may accelerate bone growth and help maintain bone mass.

But findings in mice do not always translate to people, says Karen Troy at Worcester Polytechnic Institute in the U.S. Furthermore, because these mice were adolescents, it is unclear whether these effects persist with age.

39

① All the mice in this experiment exercised regularly for half an hour, though at different times.

② Morning workouts might help make stronger and longer bones compared with nighttime exercise.

③ Exercising after eating helped four-week-old mice to grow bigger and heavier than any other activities.

④ Troy thinks highly of Chen's study because Chen and her colleagues analyzed young mice.

〔VIII〕 次の英文の内容に合致するものを次ページの①～⑥から二つ選びなさい。

A recent study conducted by researchers at the University of Virginia in the U.S. found that the brain's biological clock, the system in charge of regulating physiological rhythms (like eating and sleep schedules) is linked to the brain's pleasure center, which creates dopamine. Eating high-calorie foods causes dopamine to flood into the ventral tegmental area, a part of the brain that ensures basic needs are being met. Over time, this flooding begins to disturb normal feeding schedules, leading to over-consumption of food.

Researchers discovered this connection by studying three different groups of mice. The first group was given a diet similar to one that they would find in the wild, resulting in normal sleep and exercise patterns; they also had average weights. However, the second group that was given unlimited access to high-calorie foods that were high in sugars and fats began to eat constantly and, as a result, became obese. To prove that the pleasure center of the brain was causing this change in eating habits, the researchers also studied the third group of mice that had their dopamine-signaling patterns disrupted. These mice, even when presented with high-calorie diets, did not overeat and kept their normal weights.

This study has significant implications for the eating behaviors of people in the U.S. Head researcher Ali Güler remarked, "The calories of a full meal may now be packed into a small volume, such as a brownie. It is very easy for people to over-consume." As humans over-consume food, they fall into habits of snacking that increase their chances of gaining weight and potentially becoming obese. Furthermore, obesity increases the risk of developing other serious conditions, including heart disease, strokes, type 2 diabetes, and certain cancers. Individual health care costs for people with obesity are higher than those for people of normal weight.

The instinct to over-consume food has evolutionary roots. Over the course of thousands of years, the human brain has been conditioned to eat as much food as possible. This instinct dates back to the days of hunter-gathering, when humans often lived in famine. These conditions made it natural for humans to consume as much as they possibly could on the few occasions that they had access to food. Modern humans, however, have nearly unlimited access to food. Consequently, it is very easy for us to overeat.

With the knowledge gained from this study, we now have a better understanding of the neurochemistry underlying obesity. Moving forward, researchers and doctors can use this knowledge to study the evolution of the human mind, and perhaps find ways to help patients struggling with obesity, too.

40 41

① The flooding of dopamine into the ventral tegmental area of the brain controls feeding schedules and gets them back to normal.

② The mice that had their dopamine-signaling patterns disrupted did not overeat and gain weight.

③ According to Ali Güler, eating a small package of food helps people avoid developing serious illnesses such as heart disease and strokes.

④ Human beings had to eat as much food as possible to survive severe environments, which has affected their eating habits today.

⑤ With the advancement of research and technology in medicine, more people in modern times have managed to avoid obesity than ever before.

⑥ In this study, researchers have shown that we can employ the knowledge of obesity to find out how humans have evolved.