Ｉ　次の会話と図の中の英文を読み，下記の設問に答えよ。(配点 30)

Connor and Angus are talking at a class reunion.

Connor:　Long time no see! I think it's been like six years.

Angus:　Yeah, first time since our high school graduation. I couldn't make it to the first reunion three years ago.

Connor:　Me neither. Anyway, you haven't changed a bit, except for the long hair you used to have. I remember you being a real rock fan.

Angus:　Yeah, I had to cut it; my office's dress code is pretty strict. But I still love rock music. Actually, I started playing the guitar right after I graduated.

Connor:　Oh, really? I want to get a guitar and learn to play, too. You know, I just happened to come across this web-site for a guitar fair last week. I went but couldn't figure out what to buy; just too many guitars and I don't know the first thing about guitars.

Angus:　Are you talking about the SG Guitar sale? I bought a guitar there. I went the first day when there are usually much fewer people. I even managed to secure a parking space.

Connor:　Wow, what a coincidence! I didn't sign up with them so I couldn't get in the first day, but there were still plenty of guitars left.
1)

Angus:　You should join. Since I'm a member, I get 50% off the admission every year. On top of that, they'll send you newsletters. I've been a member for four years.

Connor:　Do you get discounts on the guitars?

Angus:　Unfortunately, not. But they've got great deals. I got a second-hand Gretsch Falcon for $600, which is a steal even without a discount.
2)

Connor:　Did you buy anything else?

Angus:　No, one guitar is enough. I also had to pay for parking and admission, and my wife was not so happy with my spending.

Connor:　Oh, you're married. That's great. I'm still looking for a partner.

Angus:　Hey, there's no need to rush. But you should buy your guitars before you get married. Once you're married, it's hard to buy anything for yourself.

Connor:　Ok, I'll keep that in mind.

Angus:　Anyway, sign up for SG Guitar before you get married. You won't regret it.

Connor:　I'll make sure I do. I think I'll get some more food.

Angus:　Hey, wait. Is that Bonny over there?

Connor:　Bonny? Yes, I think it is. Let's go talk to her.

Angus:　Yeah, let's do that.

The Notice on the Internet

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◀ ▶  http://www.sgrocks.ac.dc.com/sale13    ▽
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Guitar sale at SG Guitar Center
March 3*-6

Hundreds of guitars on sale!
We encourage visitors to use public transportation as
parking is limited. (Parking: $5.00 for the day)
Admission: $5.00

*March 3: admission reserved only for SG Guitar members

（1） How long has Angus been playing the guitar? | 1 |
　　① Three years　　② Four years　　③ Five years　　④ Six years

（2） Why does Connor say "what a coincidence!" ? | 2 |
　　　　　　　　　　　　　　　　　　1)
　　① Because they both came to the same reunion.
　　② Because they were both at the same event.
　　③ Because they were both able to park their cars.
　　④ Because they both like to play the guitar.

（3） How much did Angus spend all together at the Guitar sale? | 3 |
　　① $600.00　　　　② $605.00　　　　③ $607.50　　　　④ $610.00

（4） Which of the following is NOT true about Connor and Angus? | 4 |
　　① They are members of SG Guitar.
　　② They didn't make it to the previous class reunion.
　　③ They went to the guitar sale but on different days.
　　④ They graduated from high school at the same time.

（5） Which of the following is closest in meaning to "a steal" ? | 5 |
　　　　　　　　　　　　　　　　　　　　　　2)
　　① an illegal product　　　　　　② an average price
　　③ a taken price　　　　　　　　④ a bargain

（6） What will the two most likely do next? | 6 |
　　① Sign up for SG Guitar membership
　　② Walk toward a former classmate they both know
　　③ Get some more food from the buffet table
　　④ Keep talking about Bonny

次の英文を読み，下記の設問に答えよ。（配点 25）

A recent study found that the first black hole ever discovered is a lot bigger than scientists first thought.

Black holes are extremely massive space objects ☐ 7 ☐ gravity is so powerful that not even light escapes. The black hole, Cygnus X-1, was discovered in 1964. It is well-known for being the object of a friendly bet between two famous scientists.

Researchers found that new observations of Cygnus X-1 showed it is 21 （ ア ） our sun's mass. That is about 50% more massive than scientists had believed.

Some black holes, like the one at the center of the Milky Way Galaxy, are extremely large. They can be millions of （ ア ） more massive than the sun.

Cygnus X-1 is the Milky Way's largest-known *stellar-mass black hole. It is among the strongest X-ray sources seen from Earth, said James Miller-Jones of Curtin University in Australia, who led the study that appeared in the publication *Science*.

Cygnus X-1 turns so quickly that it comes close to the highest rate predicted under physicist Albert Einstein's theory of general relativity, Miller-Jones added. The black hole brings in material that comes from the surface of the star that it orbits. This star is a "blue supergiant," a very large star about 40 （ ア ） our sun's mass.

Cygnus X-1 originated 4 million to 5 million years ago as a star up to 75 （ ア ） more massive than the sun. But then it collapsed into a black hole <u>tens of thousands</u> <u>of years ago</u>. [1]

The research included data from the Very Long Baseline Array (VLBA), which is made up of 10 observation stations in the United States.

After Cygnus X-1 was first identified as a possible black hole, a friendly bet was made between two physicists, Stephen Hawking and Kip Thorne. <u>Hawking bet against</u> <u>the object being a black hole, while Thorne bet that it was one</u>. [2] Hawking eventually admitted that the evidence suggested Cygnus X-1 was a black hole.

*stellar-mass：恒星の質量を持つ

(Source: New Study: Black Hole May Be Larger Than Expected by John Russell, VOA learning English, Feb 27, 2021. Reproduced with permission of Voice of America.)

（1） 空所 ☐ 7 ☐ に入る語として最も適切なものを，次の中から１つ選び，その番号をマークせよ。

① which ② whose ③ when ④ what

（2） 空所（　ア　）に共通して入る語として最も適切なものを，次の中から1つ選び，その番号をマークせよ。　　8

① circles　　　　② rounds　　　　③ doubles　　　　④ times

（3） 下線部1）が表す意味として最も適切なものを次の中から1つ選び，その番号をマークせよ。　　9

① 数千年前　　　　② 数万年前　　　　③ 数十万年前　　　　④ 数百万年前

（4） 下線部2）が表す内容として最も適切なものを次の中から1つ選び，その番号をマークせよ。　　10

① ホーキングとソーンは，はくちょう座X-1がブラックホールである方に賭けた。

② ホーキングとソーンは，はくちょう座X-1がブラックホールである方に賭けなかった。

③ ホーキングは，はくちょう座X-1がブラックホールである方に賭けなかったが，ソーンはブラックホールである方に賭けた。

④ ホーキングは，はくちょう座X-1がブラックホールである方に賭けたが，ソーンはブラックホールである方に賭けなかった。

（5） この英文のタイトルを完成させるために，次の空所に入る最も適切なものを次の中から1つ選び，その番号をマークせよ。　　11

New Study: Black Hole May Be（　　　　）

① Faster Than Ever

② An Expanding Universe

③ Larger Than Expected

④ Collapsing Black Holes

山田太郎君は，「絶滅危惧種」に関して英語によるプレゼンテーションを行うことになった。山田君が参考にした英文資料の一部と作成したスライドについて，下記の設問に答えよ。
（配点 25）

An endangered species is wildlife that is in danger of extinction. Once gone, they are gone forever, and there is no going back. Losing even a single species can have disastrous impacts on the whole ecosystem, because the effects will be felt throughout the food chain. The causes include a decrease in the number and size of habitats due to development, overhunting, and environmental pollution that has greatly reduced the number of inhabitants. In recent years, the effects of habitat change and loss due to global warming and invasive animals and plants introduced by people have also become serious.

The International Union for Conservation of Nature (IUCN) compiles a list of endangered species into a database called the Red List. The list is updated from time to time based on the results of surveys of wildlife by a group of researchers in each specialized field. The ranks of the crisis are divided into the following forms: Extinct [EX] — beyond reasonable doubt that the species is no longer existent; Extinct in the wild [EW] — survives only in human care and/or outside native range; Critically endangered [CR] — in a particularly and extremely critical state; Endangered [EN] — very high risk of extinction in the wild; Vulnerable [VU] — considered to be at high risk of unnatural (human-caused) extinction without further human treatment; Near threatened [NT] — close to being at high risk of extinction in the near future; Least concern [LC] — unlikely to become extinct in the near future; Data deficient [DD]; Not evaluated [NE].

Among these, "endangered wildlife" generally refers to wildlife ranked in three categories ([CR] Critically Endangered, [EN] Endangered, and [VU] Vulnerable) in which wildlife is considered particularly weak and threatened with extinction.

As of December 2020, the IUCN Red List of Threatened Species included more than 35,765 species of wildlife in these three categories, which is 28% of the total number of assessed species (128,918). The IUCN Red List specifically identifies mammals, birds, and *amphibians in danger. For example, of the 5,932 mammal species assessed, 1,317 are endangered. This means that more than 20% of the species are threatened with extinction. Of the 11,158 bird species assessed, 1,481, or 13%, are threatened, and of the 7,166 amphibian species assessed, 2,390, or 33%, are threatened.

In addition, as research progresses on fishes and *invertebrates, which have not yet been sufficiently studied, it is possible that more species will be revealed to be in

danger. It is important to remember that the numbers shown in the Red List are only a partial picture of the critical state of wildlife in the world as a whole.

*amphibians：両生類　　*invertebrates：無脊椎動物

(Based on IUCN Red List and WWF Japan Homepage)

Taro's Presentation Slides

Title

Endangered Species
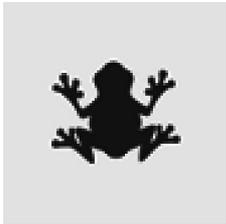
Taro Yamada

Outline

1. Introduction
2. The Red List
3. Particularly Endangered Wildlife
4. Conclusion

Introduction

Q: Do you know how many endangered species there are in the world?

A: There are about [12] species threatened with extinction as of 2020, which is almost [13] % of all the assessed species.

The Red List

Ranks	Description
EX	Extinct
EW	Extinct in the wild
CR	Critically endangered
EN	Endangered
VU	Vulnerable
NT	Near threatened
LC	Least concern
DD	Data deficient
NE	Not evaluated

[14] (for CR, EN, VU)

(IUCN)

Particularly Endangered Wildlife

(ア)
(イ)
(ウ)

0% 10% 20% 30% 40%
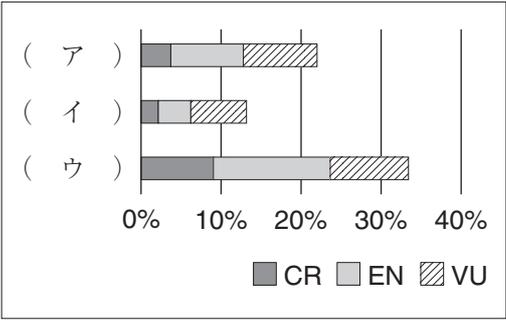
■CR ■EN ▨VU

Conclusion

1. Extinction of wildlife species is a serious problem for the entire [15] .
2. Humans are responsible for many of the cases.
3. Further studies will reveal more species in danger.

（1） 空所 | 12 | ～ | 15 | に入る最も適切なものを，次の中からそれぞれ１つ選び，

その番号をマークせよ。

12	① 6,000	② 12,000	③ 36,000	④ 129,000
13	① 10	② 20	③ 30	④ 40
14	① dangerous	② extinct	③ threatened	④ reduced
15	① ecosystem	② industry	③ nation	④ population

（2） 空所 （ ア ）～（ ウ ）に入る語の組み合わせとして最も適切なものを，次の中から

１つ選び，その番号をマークせよ。 | 16 |

　　　　　　　　（ ア ）　ー　（ イ ）　ー　（ ウ ）
① Amphibians ー Birds ー Mammals
② Amphibians ー Mammals ー Birds
③ Birds ー Amphibians ー Mammals
④ Birds ー Mammals ー Amphibians
⑤ Mammals ー Amphibians ー Birds
⑥ Mammals ー Birds ー Amphibians

From the *impeccable Zen Gardens of Kyoto to the sacred forest surrounding shrines such as Meiji Jingu in Tokyo, Japan is admired for its traditional gardens that often provide a welcome respite from the concrete jungles that surround them. However, rapid urbanization over the past half century — 91% of people nationwide currently live in urban areas compared to around 75% in 1975 — has gone hand in hand with a reduction of urban green spaces.

"If farmland and woodland is taken into account, the total area of green spaces in Tokyo has decreased by around 219,000 hectares — approximately 22% — from 1965 to 2005," says Yoshinori Akiyama, senior deputy director of the environment office at the land ministry. Even though Tokyo's urban parks have increased by 16,000 hectares over the same period, the city still has a remarkable low percentage of park area space — 6.2% — compared to dedicated spaces found in capitals such as Stockholm (29.4%), Paris (24.3%) and London (11.2%).

The loss of such green spaces has tangible consequences on the wellbeing of citizens and the environment. Analysts say that it is important to re-imagine how cities are designed and built so that planners can ⬛ 20 to the challenges posed by increasing urbanization and climate change. If properly designed, urban green spaces — even small ones — can lower ⬛ 21 air temperatures, boost bio-diversity, and provide a whole range of health and social benefits.

The loss of green spaces in Japan's cities has been occurring against a backdrop of rising global temperatures, a warming effect that is even more <u>pronounced</u> in urban areas. In the 20th century, the average temperature in six large cities in Japan including Tokyo and Nagoya, increased by 2-3 degrees Celsius, compared to a global ⬛ 22 of 0.6 degrees.
₁₎

"This temperature pattern — whereby temperatures remain higher in central areas compared to the suburban metropolitan areas — is known as the 'urban heat island,'" says Takehiko Mikami, emeritus professor at Tokyo Metropolitan University, who has conducted extensive research on urban climatology and the impact of green spaces on city temperatures.

The urban heat island effect is caused by two main factors: heat emissions connected to human activities (such as engine emissions and air conditioning) and heat retention of artificial surface, such as cement or asphalt, compared to natural ones typically found in forest and field. Cement and asphalt have <u>a low albedo</u>, which means that solar energy is absorbed during the day, resulting in an accumulation of heat that is then released gradually, causing higher temperatures (especially at night).

In contrast, green areas create a cooling effect through evapotranspiration during the daytime and heat loss from the green surface (radiation cooling) at night. The （　ア　） breeze felt when walking through a city park on a hot summer's night is an example of radiation （　イ　） in action.

The urban heat island effect poses a significant health threat to city *dwellers, leading to an increase in cases of heat stroke and heat stress, particularly during the night, Mikami says. Studies even indicate a direct correlation between death rate and the number of days in which maximum temperatures are above 30 degrees Celsius and nights in which minimum temperature remain above 25 degrees.

"It is important to preserve or even increase green areas in big cities because cool air seeps out into the surrounding neighborhood, even when the areas are small," says Mikami, whose research on Japanese cities demonstrates that surface and air temperatures in city parks are a lot lower than the built-up areas around them. "We call this the 'cool island effect.'"

*impeccable：非の打ち所がない　　*dwellers：居住者

(Source: Unear-thing Japan's home-grown solutions to urban greening (The Japan Times, Mar 28, 2021))

（1）　第1段落～第2段落の内容と合うものを次の中から2つ選び，その番号をマークせよ。ただし解答の順序は問わない。　| 17 |　| 18 |

①　全国で公園に割り当てられている区域は16,000ヘクタールである。

②　全国の緑地面積は1965年から2005年にかけて約22％増加した。

③　日本では過去50年以上にわたって都市化が進行している。

④　日本の緑地面積はパリの緑地面積の約4分の1である。

⑤　東京では人口の91％が都市部に暮らしている。

⑥　東京の緑地面積は1965年から2005年にかけて約219,000ヘクタール減少した。

（2）　下線部1）の語の意味として文脈に当てはまる最も適切なものを次の中から1つ選び，その番号をマークせよ。　| 19 |

①　進んでいる　　　　　　　　　②　はっきりしている

③　叫ばれている　　　　　　　　④　警告されている

（3）　空所　| 20 |　～　| 22 |　に入る最も適切なものを次の中からそれぞれ1つ選び，その番号をマークせよ。

20	①　respond	②　reserve	③　resemble	④　respect
21	①　surround	②　surrounded	③　surrounding	④　to surround
22	①　effect	②　warming	③　standard	④　average

（4） 下線部２）の性質として最も適切なものを次の中から１つ選び，その番号をマークせよ。

   23

   ① 通気性が悪いこと　　　　　　　　② 水を通しにくいこと

   ③ 熱が反射しにくいこと　　　　　　④ 光を吸収しにくいこと

（5） 空所（　ア　）と（　イ　）に入る語の組み合わせとして最も適切なものを次の中から１
   つ選び，その番号をマークせよ。　　**24**

   　　　（　ア　）― （　イ　）

   ① warm　　　―　cooling

   ② warm　　　―　warming

   ③ cool　　　―　cooling

   ④ cool　　　―　warming

（6） 下線部３）の要約として最も適切なものを次の中から１つ選び，その番号をマークせよ。

   25

   ① 日中の最高気温が25度以上で，夜間の最低気温が30度以上の日数は，死亡率と相関
   　関係がある。

   ② 日中の最高気温が30度以上で，夜間の最低気温が25度以上の日数は，死亡率と相関
   　関係がある。

   ③ 日中の最低気温が25度の日が続くことで，夜間の最高気温が30度の日が続くよりも
   　死亡率が高まるという研究がある。

   ④ 日中の最低気温が30度の日が続くことで，夜間の最高気温が25度の日が続くよりも
   　死亡率が高まるという研究がある。

（7） 筆者が下線部４）で意図している状況として最も適切なものを，次の中から１つ選び，そ
   の番号をマークせよ。　　**26**

   ① アスファルトの表面温度が下がること。

   ② 冷房がよく効くようになること。

   ③ 緑地によって周辺の気温が下がること。

   ④ 公園の風通しが良くなること。

次の英文を読み，下記の設問に答えよ。（配点 20）

Amabie is a Japanese legendary mermaid with a bird beak-like mouth, fishy scales, and three fin-like legs. It was first documented in the form of woodblock print known as *kawara-ban*.

The story goes as follows: In Higo Province (Kumamoto Prefecture), a local official went out to sea to investigate a mysterious glowing object (① in ② reported ③ appear ④ was ⑤ to) the sea every night. When he arrived at the spot, a glowing-green creature came out from the sea and told him, "For six years from now, there will be a good harvest every year, but there will also be an epidemic throughout the country. Draw a picture of me and (① as ② let ③ with ④ share ⑤ it) many people as possible to prevent the disease." Then it returned to the sea.

Amabie

This long-forgotten legend suddenly came under the spotlight when the COVID-19 pandemic hit the world in 2019. The image spread on social media bringing hope that the sharing of the image (① help ② the pandemic ③ stop ④ from ⑤ will). The popularity of the mythical *yokai* has since spread around the country. It is also helping businesses suffering under the pandemic. In Japan, face masks and hand sanitizers with *Amabie*'s image are sold as well as various other merchandise featuring it including charms and stuffed toys.

（1） 下線部１）〜３）を文脈に合うように並べ替える際，不必要なものが１つ含まれている。
　　その語句をそれぞれ１つ選び，その番号をマークせよ。

　　下線部１）　| 27 |
　　下線部２）　| 28 |
　　下線部３）　| 29 |

（2）　次の文は「妖怪」の説明である。空所（　ア　）と（　イ　）に入る語の組み合わせとして最も適切なものを下記から１つ選び，その番号をマークせよ。　　30

Yokai are supernatural monsters and spirits in Japanese folklore. They（　ア　）possess animal features,（　イ　）some resemble inanimate objects such as an umbrella. They have powers to cause mysterious phenomena to frighten people, but there are also good-hearted ones that are friendly and nice to people.

　　　（　ア　）─（　イ　）
① always　　─　without
② often　　　─　but
③ seldom　　─　except
④ never　　　─　or