



〈R07191119〉

注 意 事 項

1. 試験開始の指示があるまで、問題冊子および解答用紙には手を触れないこと。
2. 問題は2～9ページに記載されている。試験中に問題冊子の印刷不鮮明、ページの落丁・乱丁及び解答用紙の汚損等に気付いた場合は、手を挙げて監督員に知らせること。
3. 解答はすべて、HBの黒鉛筆またはHBのシャープペンシルで記入すること。
4. マーク解答用紙記入上の注意
 - (1) 印刷されている受験番号が、自分の受験番号と一致していることを確認したうえで、氏名欄に氏名を記入すること。
 - (2) 所定欄以外に受験番号・氏名を記入した解答用紙は採点の対象外となる場合がある。
 - (3) マーク欄にははっきりとマークすること。また、訂正する場合は、消しゴムで丁寧に、消し残しがないようによく消すこと。

マークする時	<input checked="" type="radio"/> 良い	<input type="radio"/> 悪い	<input type="radio"/> 悪い
マークを消す時	<input type="radio"/> 良い	<input type="radio"/> 悪い	<input type="radio"/> 悪い

5. 解答はすべて所定の解答欄に記入すること。所定欄以外に何かを記入した解答用紙は採点の対象外となる場合がある。
6. 問題冊子の余白等は適宜利用してよいが、どのページも切り離さないこと。
7. 試験終了の指示が出たら、すぐに解答をやめ、筆記用具を置き解答用紙を裏返しにすること。
8. いかなる場合でも、解答用紙は必ず提出すること。
9. 試験終了後、問題冊子を持ち帰ること。

[I] 次の英文 (i)～(vi) を読んで、設問 1～20の解答として最も適当なものを、(A)～(D)の中から選びなさい。

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1. How is the Perseus galaxy cluster described?
(A) Closest to Earth
(B) Filled with galaxies
(C) Largest in the universe
(D) All of the above
2. How is the sonification process described?
(A) Archiving
(B) Translating
(C) Visualizing
(D) All of the above
3. Which factor made sonification processing easier?
(A) Availability of inexpensive sound engineering software
(B) Creation of parameters for all types of numerical data
(C) Release of archived image data from 20 years ago
(D) Not enough information given
4. What is the best title for this passage?
(A) NASA Identifies Sound Waves from Outer Space
(B) New Technology Developed to Hear Celestial Melodies
(C) Scientific Data Converted into Musical Notes
(D) Scientists Captured Sounds from Black Holes

(ii) While many of us spend the year counting down until summer, the warmer months can be a challenge for the 1 in 4 adults in the United States who suffer from seasonal allergies. The bad news is that your hay fever is probably going to start getting worse as global temperatures continue to rise. In fact, you might have already started to feel its effects. “Scientists have known for a long time from studies of plants in controlled conditions like greenhouses that warmer temperatures in the springtime drive earlier flowering and start of the pollen season and, often, more pollen in the air,” William Anderegg, an associate professor in biology at the University of Utah, told Newsweek.

“Rising levels of carbon dioxide in the atmosphere also drive plants to produce more pollen. Thus, both increasing temperature and carbon dioxide levels are likely influencing pollen levels around the U.S.,” said Anderegg, who is also the director of the Wilkes Center for Climate Science and Policy. In a study, published by *Proceedings of the National Academy of Sciences* in 2021, Anderegg and his team found that pollen concentrations across North America increased by 21 percent between 1990 and 2018, in line with observed increases in annual temperatures.

The study also found that the pollen season is beginning 20 days earlier than in 1990 and lasting roughly eight days longer. As a result, people across the U.S. were being exposed to more pollen over a longer period. “These trends in pollen seasons show us that climate change isn’t something in the future. It’s here and now and affecting our health in every breath we take in the spring,” Anderegg said. “Thus, tackling climate change quickly will bring enormous benefits for our health.”

※出典は下記に記載しております。

5. What contributes the most to increasing pollen concentrations across North America?

- (A) Earlier and longer pollen season
- (B) Rising levels of carbon-dioxide in the atmosphere
- (C) Warmer temperatures in the springtime
- (D) Not enough information given

6. Which of the following is NOT an outcome of rising global temperatures?

- (A) Earlier flowering and start of the pollen season
- (B) Increased carbon dioxide in the atmosphere
- (C) Negative impact on people’s health
- (D) None of the above

7. Which of the following is true for this passage?

- (A) Americans suffer seasonal allergies well into the fall months.
- (B) Increasing temperatures are the main cause of elevated pollen levels.
- (C) The pollen season lasts about four weeks longer now than in 1990.
- (D) None of the above

8. What is the best title for this passage?

- (A) Future Climate Change Effects Concern Scientists
- (B) Pollen Concentration in U.S. Reaching New Highs
- (C) Rising Temperatures Lead to More Pollen and Hay Fever
- (D) The Influence of Carbon Dioxide on Pollen Production

※WEB掲載に際し、以下のとおり出典を追記しております。

Dewan, Pandora. 2023. “Yes, Your Hay Fever Is Worse This Year. Here’s Why.” Newsweek, June 8, 2023.
<https://www.newsweek.com/hay-fever-worse-climate-change-pollen-seasonal-allergies-1805410>

(iii) Whether roasting over an open fire or warming cold hands on a wintry walk, chestnuts capture the spirit and tradition of the season. Grown as early as 2,000 B.C. in North America, Europe and Asia, the chestnut is ingrained in the traditions of cultures around the world. The chestnut was not only a culinary staple to ancient peoples, it was used to treat ailments like whooping cough, to help women conceive, and they are eaten on New Year's Day in Japan to bring success and strength in the coming year. Filled with vitamins, minerals, and nutrients, chestnuts are a gift of good health.

The four main species of chestnuts are European, Chinese, Japanese and American. Due to blight in the early 1900s, the American chestnuts were almost wiped out, so the U.S. imports mostly European chestnuts (*Castanea sativa*). The fruit of the chestnut tree are spiky burrs that contain several brown, smooth-skinned nuts each. Inside is the cream-colored sweet flesh that has a potato-like texture. Compared to most nuts, chestnuts are lower in protein, fat and calories. Yet, one serving (about ten nuts) contains 36% DV (Daily Value, based on 2,000 calories per day) of antioxidant vitamin C, 17% DV of satiating dietary fiber, and a full 50% DV of manganese for healthy bones.

Chestnuts are unique among nuts and seeds due to their high moisture content, high levels of starch, and lower fat content. The fats they contain are healthy, unsaturated fatty acids, including linoleic and oleic. They are also a good source of antioxidants, including carotenoids and plant compounds that help fight free radicals in the body associated with aging, disease and inflammation. Emerging research suggests chestnuts may be helpful in the treatment of high cholesterol and reducing risk of coronary heart diseases.

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9. What did people traditionally use chestnuts for?

- (A) Bringing good luck
- (B) Celebrating good harvests
- (C) Combating illnesses
- (D) Improving immune systems

10. How is the texture of chestnuts' flesh described?

- (A) Potato-like
- (B) Smooth-skinned
- (C) Spiky burrs
- (D) All of the above

11. Which of the following benefits is NOT linked to chestnuts?

- (A) Fight the aging process.
- (B) Help reduce inflammation.
- (C) Promote healthy bones.
- (D) Treat coronary heart diseases.

(iv) Scientists working off the coast of Costa Rica say they've discovered the world's third known octopus nursery. The international 18-person research team found the site nearly 2 miles below sea level and believe that in the process they may have also discovered a new species of Muusoctopus, a genus of small to medium sized octopus lacking an ink sack. "The discovery of a new active octopus nursery over 2,800 meters beneath the sea surface in Costa Rican waters proves there is still so much to learn about our ocean," Dr. Jyotika Virmani, executive director of the Schmidt Ocean Institute, said in a statement.

According to a press release, researchers witnessed Muusoctopus eggs hatch. They said it demonstrated that the area, known as the Dorado Outcrop, was (A) to young octopuses. When the Dorado Outcrop—an area roughly the size of a football field—was first discovered in 2013, researchers believed octopuses couldn't grow there because they didn't observe any developing embryos at the site. Scientists said the discovery also indicated that some deep-sea octopus species brood their eggs in low-temperature hydrothermal vents, such as the one where the nursery was discovered, where fluid heated in the Earth's crust is released on the seafloor—like hot springs.

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12. Choose the best word to put in the space marked (A) in the second paragraph.

- (A) conceivable
- (B) formidable
- (C) hospitable
- (D) vulnerable

13. What did the 18-person research team find at the Dorado Outcrop?

- (A) Active octopus nursery
- (B) Low-temperature hydrothermal vents
- (C) New Muusoctopus species
- (D) All of the above

14. Why did the researchers in 2013 believe that octopuses couldn't grow at the Dorado Outcrop?

- (A) Area was too deep
- (B) Didn't see Muusoctopus embryos
- (C) Heated fluid on the seafloor
- (D) Sea temperature too high

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©2023 National Public Radio, Inc. Excerpt from a news report titled "Researchers found a rare octopus nursery off the coast of Costa Rica" by Joe Hernandez was originally published on NPR.org on July 3, 2023, and is used with the permission of NPR. Any unauthorized duplication is strictly prohibited.

(v) Québec's new commissioner of French says a boom in the number of temporary migrants is threatening the status of the French language, citing "significant repercussions." In the first report of his new position, Benoît Dubreuil (A) concerns over the rise in the use of English in the homes of immigrants to Canada. Critical of the report, the Québec Liberal Party are arguing that governments have no business in policing the languages that people speak at home. Québec is a predominantly French-speaking province in Canada.

Dubreuil also uses the report to comment on immigration statistics, particularly concerning those in transit or residing temporarily in Québec. The report, delivered to the National Assembly says "Recent polling data shows that in 2021, French was less in use than English among non-permanent residents. We can consider that this strong use of English in the workplace among non-permanent residents (34.6%) is having significant repercussions on the situation of French in Québec."

In May, Immigration Minister and member of the Coalition Avenir Québec party Christine Fréchette announced a potential plan to increase the total number of full-time immigrants to Québec to 60,000 a year by 2027. However, she made it clear that this plan would not include temporary workers and there would be no limit on their number. The Coalition Avenir Québec government has faced criticism from some opposing parties for not including temporary workers in its overall immigration plan — which at its core, is increasingly being tailored to protect the French language.

The Parti Québécois (PQ), a long term advocate for sovereignty for the province of Québec, argues temporary migrants should be a factor in the debate because their total number undoubtedly has an impact on the status of French. At a recent news conference, PQ Leader Paul St-Pierre Plamondon acknowledged Dubreuil in echoing his party's message and accusing the government of focusing only on a business lobby for more temporary workers. St-Pierre Plamondon explained to reporters "For us, it's black and white — there needs to be a plan for temporary immigration."

As of 2023, the number of native French-speakers in Québec has dropped from 77.1% to 74.8%, and the number of home French-speakers has declined from 79% to 77.5%. Liberal leader Marc Tanguay continues to bring opposing arguments to the forefront and repeated his belief for freedom of linguistic choice within their own homes. At a recent news conference he said "Trying to convince people that they are a menace because they are not speaking French at home should not be part of the debate."

※出典は下記に記載しております。

15. Choose the best word to put in the space marked (A) in the first paragraph.

- (A) addresses
- (B) admires
- (C) applies
- (D) argues

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16. Which word best describes Benoît Dubreuil's feelings about immigrants' home language use?

- (A) Embarrassed
- (B) Jubilant
- (C) Terrified
- (D) Worried

17. What is the best title for this passage?

- (A) Decline of French Speakers in Québec Highlighted
- (B) Language Mixing of Québec's Residents Debated
- (C) Québec's Temporary Migrants Seen as Threat to French
- (D) Repercussions of French Speakers in Québec Considered

※WEB掲載に際し、以下のとおり出典を追記しております。 — 6 —

Kontos, Athina. "Québec's Temporary Migrants Seen as Threat to French." Language Magazine, June 23, 2023.
<https://www.languagemagazine.com/2023/06/23/quebec-immigration-threat-to-french>.

(vi) If you've ever had a hard disk drive (HDD) fail on you, you're certainly not alone. It turns out that this is actually a lot more common than most people think. According to research carried out across a sample of over 17,000 hard drives, the average life span of an HDD is only two years and 6 months. Does that make the HDD one of the weakest components inside your PC?

Cloud storage and backup company Backblaze released an interesting report about the average time it takes for an HDD to fail. Backblaze examined a total of 17,155 HDDs of varying sizes and models. Based on that sample, it came to the conclusion that an HDD only functions for around two-and-a-half years on average. The company was able to run this study on its own failed drives that were previously used in its data centers. This includes models from Seagate, Toshiba, or Western Digital (WDC). In total, 72 different models were included. If the company only considered drives it no longer uses in its data centers, the sample would have been much smaller—3,379 drives spanning 35 models. The average age would also be negligibly higher, reaching 2 years and 7 months.

Backblaze recorded the power-on hours of each drive, along with their failure dates, serial numbers, capacity, and SMART (Self-Monitoring, Analysis, and Reporting Technology) raw data. The study excluded all failed boot drives, drives with data errors or inconsistencies, and drives with no SMART raw attribute data. In addition to exposing the short average life span of an HDD, the study also finds that Seagate drives are the most susceptible to failure, while WDC models saw the least casualties. The massive Seagate 12TB ST12000NM0007 turned out to be the fastest to break, reaching an average age of 1 year and six months and a total of 2,023 failures. The only HDD to break down even more often was the Seagate 4TB ST400DM000 (5,249 failures), but it also lasted a lot longer on average—3 years and 3 months.

Should you be worried if you're still using an HDD, given that they seem to only last for such a comparatively short time? Not necessarily. Backblaze doesn't have any HDDs in sizes that are typically used by consumers (1TB, 1.5TB, 2TB, 3TB, and 5TB), and it seems that the smaller the HDD, the longer it can last. Many people also no longer use HDDs, having switched to solid-state drives (SSDs) as their prices continue dropping. Still, it's always a good idea to back up your data.

18. What is the weakest component of a PC?

- (A) HDD
- (B) Keyboard
- (C) Mouse
- (D) Not enough information given

19. How did Backblaze conduct their study of HDD failure?

- (A) Compared cloud storage and HDD failure rates.
- (B) Examined drives currently being used in their data centers.
- (C) Examined failed drives from their data centers.
- (D) Focused on HDDs typically used by consumers.

20. Which type of data were NOT included in the Backblaze study?

- (A) How long each drive had been powered on
- (B) How much data the drive contained
- (C) When the drive failed
- (D) None of the above

〔Ⅱ〕 次の設問21～30の空所を補うものとして最も適当な語を、(A)～(K)の中から選びなさい。
ただし、使われない語が含まれていることもあります。また、同じ語を繰り返して使うことも
できます。空所に何も補う必要のない場合には (L) を選びなさい。

(A) about	(B) by	(C) for	(D) from	(E) in	(F) into
(G) on	(H) through	(I) under	(J) with	(K) within	(L) NO WORD

21. Many people had to cut back on their spending because of a recent abrupt rise _____ prices.
22. While your PC is _____ for repair, please make do with this replacement machine.
23. To make effective use of big data, the company entered _____ a contract with prominent information scientists.
24. I was happy to vouch _____ my friend so that she could get the job she wanted.
25. It's a good idea to associate _____ people who share your same values and interests.
26. The government paid \$20,000 to each internee _____ way of an official apology.
27. Please be advised _____ that we cannot guarantee the security of the information you send us through email.
28. The government bans any type of discrimination _____ the grounds of religion, gender, or age.
29. The computer company recommends updating your operating system _____ a regular basis to prevent security problems.
30. The new retailer specializes _____ shoes made from recycled products, such as used plastic bags and PET bottles.

〔Ⅲ〕 次の設問31～40のA～Dのうち、誤った英語表現を含んだ部分がある場合にはA～Dの中の一つを、誤りがない場合にはEを選びなさい。

31. Witnesses struggled to teach to the police about the traffic accident which involved two pedestrians and one motorcyclist. NO ERROR
A B C D E
32. Sarah worked hard to split the woods into small pieces so they'd easily fit into the fireplace. NO ERROR
A B C D E
33. I wasn't paying attention when I was walking and I fell down a flight of stairs. I was very painful. NO ERROR
A B C D E
34. I was worried I might not get a seat during rush hour but fortunately there was room in back of the bus. NO ERROR
A B C D E
35. After years of hard work and study, finally graduating from college was a dream coming true. NO ERROR
A B C D E
36. As a high school student, Jiro used to listen to the radio during he was studying at home. NO ERROR
A B C D E
37. Giving that Dr. Miller published three articles and one book this year, he should be promoted to professor. NO ERROR
A B C D E
38. As is often in the case with many health issues, the sooner you identify and treat tooth decay, the less pain the treatment involves. NO ERROR
A B C D E
39. Although it is found in and on the human body and thrive in various forms, bacteria are one of the simplest living organisms. NO ERROR
A B C D E
40. My sister had long dreamed of attending the concert of her favorite artist so I lent her \$30 so she can go. NO ERROR
A B C D E

〔以下余白〕