

平成 29 年度 入学試験問題

英 語 問 題 用 紙 (後期)

試験時間	90分
問題用紙	1 ~ 18頁

注 意 事 項

1. 指示があるまで問題用紙は開かないこと。
2. 問題用紙および解答用紙に落丁、乱丁、印刷の不鮮明な箇所があったら、手を挙げて監督者に知らせること。
3. 解答が終わっても、または試験を放棄する場合でも、試験終了までは退場できない。
4. 携帯電話等の電子機器類は電源を必ず切り、鞆の中にしまうこと。
5. 机上には、受験票と筆記用具（鉛筆、シャープペンシル、消しゴム）および時計（計時機能のみ）以外は置かないこと。（耳栓、コンパス、定規等は使用できない。）
6. 問題用紙および解答用紙に受験番号と氏名を記入すること。
7. 解答はすべて解答用紙の所定の解答欄に記入すること。欄外には何も書かないこと。
8. この問題用紙の余白は自由に用いてよい。
9. 質問、トイレ、体調不良等で用件のある場合は、無言のまま手を挙げて監督者の指示に従うこと。
10. 中途退室時は、問題用紙および解答用紙を裏返しにすること。
11. 受験中不正行為があった場合は、試験の一切を無効とし、試験終了時間まで別室で待機を命じる。
12. 試験終了後、解答用紙は裏返し、問題用紙は持ち帰ること。

受験番号		氏名	
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[ I ] 次の英文を読み、設問に答えよ。解答用紙（記述用）に記入すること。

Several anthropological studies show that, just like other pre-Hispanic natives, those who inhabited the desert in northern Chile faced periods of food shortages, severe weather conditions, crippling diseases and violence. However, <sup>(1)</sup> a new analysis of a stress hormone in hair samples from 19 mummies of people who lived between 500 and 1,500 years ago suggests that perhaps not all of them had as stressful an existence as previously thought.

This interpretation “is different from  had been assumed so far,” says Hermann Niemeyer, head of the Laboratory of Organic Chemistry at the Faculty of Sciences of the University of Chile, and one of the authors of the study. Niemeyer and his colleagues took hair samples from 19 mummies of San Pedro de Atacama, five of them from the Middle Period (400 to 1000 AD) and the rest from the Late Intermediate Period (1000 to 1400 AD), and measured the capillary concentration of cortisol, a hormone released in  to real or perceived threats.

Because hair grows on average one centimeter per month, <sup>(2)</sup> the analysis functions as an indicator of the stress experienced during the natives' last months of life – and may be an invaluable window into the emotional life of the remote past. Although it is impossible to rule out some degree of degradation caused by decomposition, Niemeyer says the mummies' hair and other organic remains are extremely well preserved because of the arid San Pedro de Atacama atmosphere. “And cortisol itself is a fairly stable molecule,” he adds.

Researchers also measured the concentration of cortisol in the hair of 19 healthy, non-obese living residents of Santiago de Chile, ranging from 23 to 55 years old. The results were surprising: cortisol levels proved to be similar in modern and in prehistoric samples. “While the environmental, technological and health conditions in ancient times could be considered restrictive in relation to the conditions of life today, apparently they did not alter the levels of systemic stress of these populations,” the authors wrote in *Chungará*, a Chilean anthropology magazine.

The finding contradicts previous studies. Applying a similar methodology in 2009, a team of researchers led by Emily Webb, then at the University of Western Ontario, found that mummies from different places in Peru presented very high stress levels. The team attributed this to food shortages, droughts, interpersonal conflicts and other threats to life. Researchers now assume that – despite all odds – the ancient  of the Atacama were well adapted to the conditions of the local environment, since human occupation in the area went on for thousands of years.

But this  of a low-stress life for the remote Atacama people should not necessarily be extrapolated to the experience of other pre-Hispanic natives. “The diversity of

environments and cultural processes along the Andes is so heterogeneous that we must be cautious in expanding our findings to other prehistoric societies in our continent,” warns the study’s lead author, physical anthropologist Rocio Lopez Barrales from the University of Chile.

The  of new techniques, such as the measurement of cortisol in mummies’ hair, “is interesting for providing information on specific aspects,” says Lourdes Marquez Morfin, a bioarchaeologist at the National School of Anthropology and History in Mexico, who specializes in society and health in ancient populations and was not involved in the new research. However, she adds that the interpretation in the Atacama study  solid if it had considered a larger number of variables and health indicators.

<注>

**mummies:** mummy (ミイラ) の複数形

**capillary:** 毛細血管

**decomposition:** 腐敗

**cortisol:** コルチゾール (副腎皮質ホルモンの一つ)

**extrapolate:** 既知のものに基づいて未知のものを推測する

**systemic:** 全身の

問1 下線部(1)で述べられている analysis を可能にした科学的条件として、本文では2つのごとが述べられている。そのうちの1つは環境条件である。もう一つの条件を日本語で書け。

問2 下線部(2)を和訳せよ。

問3 本文の内容に照らし、 ~  に入れるのに最もふさわしい名詞1語を書け。ただし、それは次の語群の動詞のうちいずれかを適切な名詞形に直したものとする。なお同じ語を繰り返して選ばないこととする。また、-ing で終わる動名詞は解答としない。

add	alter	apply	assume
compare	inhabit	involve	respond

問 4 本文の内容に照らし、に入れるのに適切な英語 1 語を書け。

問 5 本文の内容に照らし、に入れるのにふさわしい英語表現を 5 語以内で書け。

問 6 Niemeyer の研究チームの調査に関してその内容に合わないものを次の(1)～(5)から 2 つ選び、その番号を書け。さらにそれぞれそのように判断した理由を日本語で具体的に説明せよ。

- (1) Niemeyer and his colleagues used the hair samples of mummies that had substantial damage caused by the severe weather conditions of the area.
- (2) The method Niemeyer and his colleagues employed in their study was not particularly new because some studies had been conducted using a similar method.
- (3) In the study by Niemeyer and his colleagues the number of hair samples from mummies was identical to that from healthy contemporary individuals.
- (4) The lead author of this study is aware that their findings may not be applied to other ancient communities in the Andes.
- (5) The results of this study suggest that the life of the ancient Atacama people was far less constrained than that of present-day Chileans.

[ II ] 下記の指示にしたがって英文を書け。解答用紙（記述用）に記入すること。

In your opinion, is modern life becoming more or less stressful than before? Write a paragraph of about 50 words, giving reasons to support your opinion.



[ III ] 次の英文を読み、設問に答えよ。解答用紙（マークシート）に記入すること。（各問に通り番号がついているので対応する欄に解答せよ。）

Can you jump that gap? Will you even try? Your visual system helps you make such decisions by warping and stretching the things you look at according to your physical traits or abilities, says Jessica Witt, a cognitive psychologist at Colorado State University, Fort Collins.  showing us the world as it is, our vision toys with things like slope and distance. The harder a task, the more it seems to magnify before our eyes. These visual biases may have evolved to help us make quick decisions, letting us know at a glance which tasks to tackle. At the annual meeting of AAAS (which publishes *Science*) in Washington, D.C., Witt described several ways our physical abilities change what we see.

In a 2005 study, Witt and her colleagues snagged softball players after a game and told them to choose – from several circles printed on a poster – the one that was the same size as a softball. Athletes who had a good night at bat overestimated the size of the ball, whereas those who kept missing underestimated the ball's size. In a similar experiment, Witt found that golfers who sank more putts judged golf holes as .

In the softball experiment, it wasn't clear whether people really saw things differently or just misremembered them. To find out, Witt turned to field goals in U.S. football, where players must kick a ball over a crossbar that connects two vertical uprights. After several field goal attempts, participants adjusted a small model made of plastic pipe to match the proportions of the goal. People who kicked the ball too low set the model crossbar higher, whereas those who kicked the ball too wide set the model uprights closer together. People could look at the real goal while adjusting the model, so the findings suggest .

In parkour – an activity that evolved from obstacle course training – athletes vault, leap, and climb through the urban environment, often launching themselves to the tops of walls. In a 2011 study, Witt and her colleagues asked both parkour experts and novices how well they thought they could climb a given wall and then asked them to estimate its height. Parkour novices saw the walls as taller than they actually were, whereas experienced parkour athletes tended to see walls .

Even reaching for the remote control could mess with perceived distances. In a 2005 study, Witt and her colleagues asked participants to estimate the distance to a dot on a table. People consistently underestimated the distance to dots that were close enough for them to reach. They also overestimated the distance to dots that were out of their reach. When participants were given a conductor's baton, their perceptions shifted again: dots in reach of the baton appeared  than they actually were. But this shift only happened if people planned to use the baton; when they just held it, the illusion went away. This suggests that our visual

system .

In a classic earlier study that Witt referenced, researchers asked participants at the base of a hill to estimate the hill's slope. It looked steeper to people who were tired, elderly, or wearing a heavy backpack.

Building on the backpack study, Witt found that distances look farther to people when they weigh more.  →  →  →

<注>

**snag:** to catch or obtain someone or something

**upright:** a tall part of the goal frame

**parkour:** a type of sport, in which athletes try to move as quickly and efficiently as possible through an area of a city (including over the tops of buildings), using only their bodies.

**pound:** a unit of weight equivalent to 0.45 kg

A. 本文の内容に照らし、 ~ に入れるのに最もふさわしいものを、それぞれ(a) ~ (d)から1つ選べ。

1.

- (a) In addition to
- (b) In spite of
- (c) Just as
- (d) Rather than

2.

- (a) closer
- (b) farther
- (c) larger
- (d) smaller

3.

- (a) they failed to kick a ball over a crossbar
- (b) they managed to make a quick decision
- (c) they merely misunderstood the goal
- (d) they really saw the goal differently

4.

- (a) accurately
- (b) at best
- (c) correct
- (d) shortly

5.

- (a) closer
- (b) farther
- (c) larger
- (d) smaller

6.

- (a) adjusts our physical abilities to match reality
- (b) estimates physical traits of an object at a distance
- (c) perceives reality as it is
- (d) warps reality to help us plan action

B. 下線部の語 (vision, および model) の本文中の意味は何か。最も近い意味で使われている文を、それぞれ (a)～(d) から 1 つ選べ。

7. vision (第 1 番目の段落)

- (a) We are working hard to fulfill the vision of the founder.
- (b) Maybe you had visions of being surrounded by happy, smiling children.
- (c) The disease typically causes vision loss during childhood or adolescence.
- (d) Meeting this ambitious objective will require real vision.

8. model (第 3 番目の段落)

- (a) The company decided to introduce a fresh model of their luxury car.
- (b) Darwin eventually put forward a model of biological evolution.
- (c) We have been asked to build a model of the Eiffel Tower for a school project.
- (d) Our study programs follow the models already available to students in part of Europe.



C. 本文の内容に照らし、最後の段落を論理的な文章として完成させるのに最もふさわしい順序となるよう次の(a)~(d)の文を並び替えよ。なお、本文の  ~  のそれぞれに対応する記号を選ぶこと。

9.

10.

11.

12.

(a) The results were dramatic; an extra 200 pounds of body weight roughly doubled people's estimates.

(b) She and her colleagues went to a Wal-Mart and asked shoppers to estimate the distance from where they stood to several cones on the ground.

(c) Such visual biases could make it harder for obese people to adopt an active lifestyle, according to Witt.

(d) Obese participants saw the cones as farther away than people who fell in the "normal" range or were only moderately overweight.

D. 本文の内容に照らし、次の英文を完成させるのに最もふさわしい表現を次の(a)~(d)から1つ選べ。

13. Through the series of studies the researcher shows that ...

(a) perception is solely governed by the optical information from the environment.

(b) perception can affect how well or poorly one might perform in a wide variety of situations.

(c) visual information is objective and therefore is uniformly perceived.

(d) perception does not always relate exactly to a physical reality.

E. 下記の3つの語について、最も強く発音される音節の母音が一致するものを、それぞれ(a)～(d)から1つ選べ。

14. psychologist

- (a) continuous
- (b) height
- (c) originality
- (d) quantity

15. participant

- (a) bargain
  - (b) ~~equivalent~~
  - (c) exaggerate
  - (d) migrate
- 

16. estimate

- (a) admirable
- (b) elaborate
- (c) frustrate
- (d) indispensable

[ IV ] Read the text and answer the questions that follow.

解答用紙（マークシート）に記入すること。各問に通し番号がついているので対応する欄に解答すること。

**Person A:** Let's start out, as you do in the book, with a few basic facts about the human brain. You say that it's the most complex material that we've discovered in the universe, and yet it only weighs three pounds. What makes it so complex ( ア )?

**Person B:** Well, the brain is made up of billions of neurons, which are the cells of the brain, ( イ ) and these are connected to each other in such a jungle of complexity ( ウ ). So for example, every neuron is connected to about 10,000 of its neighbors in very specific ways ( エ ), and what this means is if you were to take a very tiny <sup>(1)</sup> chunk of brain tissue, a cubic millimeter of brain tissue, there are more connections in there than there are stars in the Milky Way Galaxy. <sup>(2)</sup> Now the weird part is when we look at this very complex machinery, you know it's sort of got the consistency of mashed potatoes, and somehow all that wet gushy stuff is us.

**Person A:** What's so bizarre is we are composed of these billions or trillions of bursts of neural connections, and yet each of us feels like a single <sup>(3)</sup> unified organism. I am me, myself.

**Person B:** Ha, right. So that's mystery number one – why we have any unified sense of self at all. I'm calling this the team of rivals framework for thinking about the brain. Because  is how is it that you can argue with yourself, and cajole yourself and make deals with yourself. If you are at a party and someone offers you chocolate cake, part of you wants that chocolate cake, and part of you says “no, don't eat it, you're going to get fat.” You can have this argument with yourself, and then finally you might say, “OK fine, I'll eat it, but only if I go to the gym tomorrow.” But who exactly is talking with whom here? Isn't it all you somehow? <sup>(4)</sup> So this got me thinking, this is the only framework for understanding the brain. It can only be understood in terms of competition between competing parts that all have their own goals.

**Person A:** I assume you borrowed that team of rivals phrase from the historian Doris Kearnes, who used it to <sup>(5)</sup> describe Abraham Lincoln's cabinet. Lincoln set up his cabinet that way specifically to give him an advantage  governing. He wanted to be able to hear lots of different opinions. What's the advantage for us of having a brain that functions like a team of rivals?

**Person B:**  it may be that this is the reason why humans are so much more flexibly intelligent than many other animals, because having a team of rivals gives us different approaches and possibilities to try .

**Person A:** Can you begin to <sup>(6)</sup>identify some of the members of that team of rivals? <sup>(7)</sup>That is, are there certain people who are always sitting at that inner table?

**Person B:** There always seems to be a battle between what we might <sup>(8)</sup>summarize as emotion and rationality. The ancient Greeks  had an expression that life is as though you are a charioteer and you're trying to stay on the straight road. You have two horses, the white horse of reason and the black horse of passion, and each of them is always trying to pull you off the road in a different direction, and your <sup>(9)</sup>job as the charioteer is to hang on tight and try to keep the middle road between these. And that's probably quite a good thing.

<Notes>

**pound:** a unit of weight equivalent to 0.45 kg

**Milky Way Galaxy:** the name of a particular group of millions of stars held together by gravity

**charioteer:** A chariot is a type of carriage that is pulled by horses. The driver of a chariot is called a charioteer.

17. Which of the following best describes Person B's main idea?

- (a) It is a mystery that even though we have one brain, we don't have a unified sense of self.
- (b) It is important to consider things from different perspectives to reach the best conclusion.
- (c) Each human mind is like a democratic organization with different voices arguing and negotiating with one another.
- (d) We can only understand how a person has a unified sense of self if we understand that different parts of the brain have different goals.

18. *Where would the following best fit in the text? Choose the best answer from the choices (a) to (d).*

“that at this moment in time we don’t have really much of a clue at all about the detailed patterns at the very small level”

- (a) { ア }
- (b) { イ }
- (c) { ウ }
- (d) { エ }

19. *Which of the following is closest in meaning to “chunk”, which is the underlined word marked (1), in the sense that it is used in the text?*

- (a) whole
- (b) element
- (c) material
- (d) piece

20. *Look at underline (2) in the text. Which of the following best expresses Person B’s main point in saying this?*

- (a) Person B is talking about investigating complex machinery.
- (b) Person B is comparing the physical properties of complex machinery to mashed potatoes.
- (c) Person B is talking about the relationship between the brain and ourselves.
- (d) Person B is comparing us to wet gushy stuff.

21. Which of the following is closest in meaning to “unified”, which is the underlined word marked (3), in the sense that it is used in the text?

- (a) separated
- (b) undivided
- (c) unique
- (d) special

22. Person B says, “So this got me thinking”, which is the underlined phrase marked (4) in the text. What does “this” refer to? Choose the best answer from the following options.

- (a) how people can argue with themselves
- (b) the fact that part of you wants to eat chocolate cake
- (c) a framework for understanding the brain
- (d) a unified sense of self

23. Which of the following is closest in meaning to “describe”, which is the underlined word marked (5), in the sense that it is used in the text?

- (a) characterize
- (b) confirm
- (c) argue
- (d) tell

24. Which of the following is closest in meaning to “identify”, which is the underlined word marked (6), in the sense that it is used in the text?

- (a) associate
- (b) guess
- (c) imagine
- (d) name



25. Which of the following is closest in meaning to “That is”, which is the underlined phrase marked (7), in the sense that it is used in the text?

- (a) Nevertheless
- (b) As a matter of fact
- (c) In other words
- (d) As a result

26. Which of the following is closest in meaning to “summarize”, which is the underlined word marked (8), in the sense that it is used in the text?

- (a) quote
- (b) break down
- (c) encapsulate
- (d) say

27. Which of the following is closest in meaning to “job”, which is the underlined word marked (9), in the sense that it is used in the text?

- (a) task
- (b) employment
- (c) profession
- (d) post

28. Which of the following would best fill space A?

- (a) I've been interested in something for years
- (b) something I've been interested in for years
- (c) for years I've been interested in something
- (d) I've been interested in years for something

29. Which of the following would best fill space  ?

- (a) in
- (b) on
- (c) to
- (d) under

30. Which of the following would best fill space  ?

- (a) So,
- (b) I mean,
- (c) Therefore,
- (d) Well,

31. Which of the following would best fill space  ?

- (a) in
- (b) out
- (c) up
- (d) to

32. Which of the following would best fill space  ?

- (a) approximately
- (b) virtually
- (c) actually
- (d) acutely

33. *In the final paragraph, Person B tells Person A about an ancient Greek expression. Based on what is said, which of the following statements would Person B be most likely to agree with? Choose the best answer.*

- (a) Society should be more emotional.
- (b) It is important to stay in the middle of the road.
- (c) Society should not be too rational.
- (d) It is more important to be rational than emotional.

34. *What is the most likely situation? Choose the best answer from the following options.*

- (a) Two work colleagues are having a conversation about the human brain.
- (b) A student and her professor are having a conversation about the topic of a recent lecture.
- (c) Person A and Person B are having a debate about the nature of the human brain.
- (d) Person A is interviewing Person B about a topic he/she has published on.

35. *Which of the following do Person A and Person B not mention? Choose the best answer.*

- (a) how heavy the brain is
- (b) the number of links between neurons
- (c) the texture of the brain
- (d) the shape of the brain

36. *What can we infer about Abraham Lincoln's cabinet? Choose the best answer from the following options.*

- (a) It allowed him to hear things better.
- (b) It consisted of a number of people who had conflicting views.
- (c) He wanted it to function in a similar way to the brain.
- (d) He set it up following Doris Kearnes' description.

使用著作物:

An article written by Matías Loewy for Scientific American (July 23, 2016).

<https://www.scientificamerican.com/article/>

An article written by Nala Rogers for American Association for the Advancement of Science (Feb. 16, 2016).

<http://www.sciencemag.org/news/2016/02/>

A transcript of an interaction taken from the following URL.

<http://www.ttbook.org/book/transcript/transcript-david-eagleman-incognito>

(一部改変あり)