

# R 6 英 語

この冊子は、英語の問題で 1 ページより 10 ページまであります。

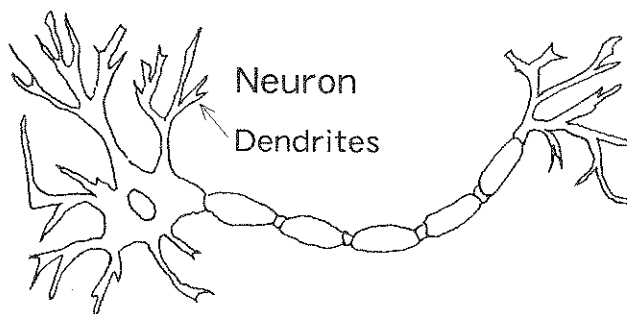
## [注 意]

- (1) 試験開始の指示があるまで、この冊子を開いてはいけません。
- (2) 監督者から受験番号等記入の指示があったら、解答用マークシートに受験番号と氏名を記入し、さらに受験番号と志望学科をマークしてください。
- (3) 解答は、所定の解答用マークシートにマークしたものが採点されます。
- (4) 解答用マークシートについて
  - ① 解答用マークシートは、絶対に折り曲げてはいけません。
  - ② マークには黒鉛筆(H BまたはB)を使用してください。指定の黒鉛筆以外でマークした場合、採点できないことがあります。
  - ③ 誤ってマークした場合は、消しゴムで丁寧に消し、消しくずを完全に取り除いたうえ、新たにマークしてください。
  - ④ 解答欄のマークは、横 1 行について 1 箇所に限ります。2 箇所以上マークすると採点されません。あいまいなマークは無効となるので、はっきりマークしてください。
  - ⑤ 解答用マークシート上部に記載されている解答上の注意事項を、必ず読んでから解答してください。
- (5) 試験開始の指示があったら、初めに問題冊子のページ数を確認してください。  
ページの落丁・乱丁、印刷不鮮明等に気づいた場合は、手を挙げて監督者に知らせてください。
- (6) 問題冊子は、試験終了後、持ち帰ってください。

1

Read the following passage and answer the questions below. (53 points)

- (1) The basis of brain growth is not the increase in bulk numbers of neurons\* themselves but is primarily a story of the proliferation\* of the dendrites.\* These dendrites will form in a way that reflects what has happened to you ... As your neuronal connections grow, shaped by your particular experiences, so the dialogue between your brain and the outside world becomes more two-way ... The individualization of the brain will increase as vast ranges of brain-cell circuits form in constant and complex interaction with the environment that makes up your daily existence. This making of new connections, which has a direct basis in the connections between neurons, is surely the essence of learning.



- (2) A few years ago, one fascinating example captured the imagination of the media: the findings, based on brain scans, revealed that a certain region in the brains of London taxi-drivers was physically larger than in non-taxi-driving individuals of a comparable age. Since the area in question, the hippocampus, is related to memory functions and since London taxi-drivers have impressive memories, needing as they do to learn the layout and names of all the streets of London by heart, here surely is a clear demonstration of how the brain, even in adults, responds to stimulation.

- (3) In another report, brain scans have revealed that in highly skilled musicians there is an increase of 25 per cent in the size of a key part of the brain related to hearing, auditory cortex, compared with people who have never played an instrument. And more telling still is the observation that <sup>(a)</sup> this increase matches up with the age at which the individuals began to practise rather than when they achieved proficiency. The critical issue, it seems, is the activity itself of practising music, not how good you are.
- (4) A further experiment, again with adult humans, proves that you do not have to volunteer for a change in career nor practise at music for long to change the size of the functional areas of your brain; instead, you can enrol in an investigation of the effects of five days of piano playing for two hours each day. In such a study the subjects <sup>(b)</sup> were all non-piano-players and were divided into three groups. Group 1 were merely exposed to a piano and left to play around with it as they wished; Group 2 started to practise five-finger exercises, whilst Group 3 had simply to imagine they were playing the exercises. Perhaps not surprisingly, the area of the brain relating to the movement of digits <sup>(c)</sup> dramatically expanded in Group 2 compared to their uninstructed colleagues in Group 1. However, the truly amazing result was that Group 3, those who had engaged in non-physical mental practice, had brain changes almost as impressive as those <sup>(d)</sup> who had acted out what *they* were only rehearsing in their minds. Apart from discrediting once and for all the old dualism of mental versus physical, of mind versus brain, such experiments surely ram home\* the point that what you do is reflected in the fine architecture of your brain, and that a particular formation of your brain cells will enable you to perform a particular skill with ever-increasing facility.
- (5) But such exaggerated studies on the effects of experiences are only the tip of the neurological iceberg. As for the rest of the body, the more any particular part of the brain is exercised the more effective it will become. This effectiveness, in brain terms, means the proliferation of dendrites and

hence the appropriation of more brain territory. On a much more subtle scale everything you do, and everything that happens to you, will leave its mark, literally, on your brain. The human brain, after all, is very good at learning; our ability to adapt to our environment, to learn from experience, distinguishes us from all other primates\*, even chimps\*. Our singularly *human* brains have enabled us to occupy more ecological niches\* than any other species on the planet; the capacity of our neuronal connections for adaptation has freed us from the genetic tyranny of a generic instinct. Different cultures geographically separate in space, like generations separate in time, differ so much from each other because the respective brains have been exposed to such different influences.

(Adapted from Susan Greenfield's *Tomorrow's People: How 21st-century Technology Is Changing the Way We Think and Feel*)

#### Notes

neurons : nerve cells which send messages to and from the brain

proliferation : rapid reproduction

dendrites : short branched extensions of nerve cells

ram home : make clear

primates : humans, monkeys, and apes

chimps : chimpanzees

niches : small areas

- (1) Complete the sentence below which summarizes paragraph (1). Choose the best item to fill in the blank from the choices and mark the number on your Answer Sheet.

As far as brain-cells are concerned, the act of learning consists in setting up new ( 1 ) between neurons.

- 1 intervals                      2 links                      3 senses                      4 spaces

- (2) Complete the sentence below which refers to what the writer says in paragraph (2). Choose the best item to fill in the blank from the choices and mark the number on your Answer Sheet.

A piece of research based on brain scans showed that a part of the brains of London taxi-drivers was ( 2 ) by learning the layout and names of all London streets by heart.

- 1 abused                      2 expanded                      3 recovered                      4 softened

- (3) Which of the items below is the closest in meaning to the underlined part (a) in the passage? Choose one from the choices and mark the number on your Answer Sheet.

- 1 even more surprising is the view  
2 even more revealing is the finding  
3 even more pleasing is the possibility  
4 even more encouraging is the prospect

(4) Which of the items below contains the word “subjects” that is the closest in meaning to the underlined part (b) in the passage? Choose one from the choices and mark the number on your Answer Sheet.

1 Global warming has been one of the most controversial subjects debated in the media.

2 A kingdom has a king and his subjects, while a republic has its citizens.

3 Marking her students’ compositions, Jackie found that some sentences were missing subjects.

4 Health authorities will have to approve appropriate projects involving human subjects to keep pushing the frontiers of medicine.

(5) Which of the items below is the closest in meaning to the underlined part (c) in the passage? Choose one from the choices and mark the number on your Answer Sheet.

1 fingers

2 images

3 keys

4 sounds

(6) What does the underlined part (d) stand for in the context of paragraph (4)? Choose one item from the choices and mark the number on your Answer Sheet.

1 Group 1

2 Group 2

3 Group 3

(7) For each of the following statements, mark your **Answer Sheet** with either T, if it is true, or F, if it is false.

- 1 When a person acquires a new skill, it is always the hippocampus that grows in size.
- 2 The study described in paragraph (2) shows that quick responses to stimulation are necessary for learning skills.
- 3 According to the report in paragraph (3), in order for the auditory cortex to grow in size, reaching a level of proficiency is more important than the age when you started to practice music.
- 4 The experiment described in paragraph (4) shows, simply playing piano in your mind, without even actually touching it, for a few hours a day for a short period can change the formation of your brain.
- 5 The experiment described in paragraph (4) reminds us that mind and body are different faculties functioning separately from each other and that we should treat them as such.
- 6 When the writer says in paragraph (5), "The human brain, after all, is very good at learning," she is referring to its flexibility to adjust itself to an environment as well as its ability to learn from experience.
- 7 The writer believes that, compared with other species on Earth, the strength of the human species lies in the function of its brain to learn everything by heart.
- 8 The brains of people who are constantly exposed to different kinds of stimulation will accordingly develop in different ways.

- 2** The following is a part of an interview script. Read the passage and answer the questions below. (31 points)

**Interviewer:** You create illustrations for various products. Do you use the same creative process for each product line, or do certain lines require something different?

**Illustrator:** The main thing that changes with each product is the space. With my wall art, for example, I have a lot of space to work with, so the ( 1 ) are minimal. This allows me to be very creative, but it can bring its own challenges. For a large scale piece, you have to be very aware and sometimes it is easy to lose sight of scale. I overcome this by printing areas of the canvas off and making sure the scale is correct.

For greeting cards, you have a ( 1 as 2 challenge 3 different 4 have 5 the space 6 you ) <sup>(2)</sup> is far smaller. You have to be more disciplined with how you use the space and use the area effectively.

**Interviewer:** What's your favorite ( 3 ) for creating your illustrations?

**Illustrator:** As a digital illustrator, I always illustrate straight on to my computer — whether it be using my drawing tablet or my mouse. I do like to add more organic elements into my work, though. For example, I like to add scanned fabrics or patterns because ( 1 an added 2 element 3 gives 4 my 5 this 6 work ) <sup>(4)</sup> of interest. However, it always depends on the look that I am trying to achieve.

I find digital illustration works so well for me because I enjoy the control it gives me. You have the advantage of tweaking what you have drawn after you have drawn it and you have more ( 5 ) to play around when you are on the computer. For example, a color change can be done in an instant so you have a fantastic ability to be very experimental.

**Interviewer:** What's in your sketchbook?

**Illustrator:** I create all of my art on my computer and I have folders full of



doodles that I have either not finished or not quite happy with.

Sometimes I find the direction I have taken a design is not quite where I had originally imagined it. That is, of course, not always a bad thing. It actually happens quite a lot that my first sketch of how I want a design to look is nowhere near how it ends up. But that is how things evolve and better designs can come of that.

(6)

As I am designing, I am always experimenting ... so a design nearly always progresses from an initial vision. Most of the time I find that if I keep working on the design I will eventually get there. But there are times when I put the illustration aside and find an afternoon, or a few days, away from it is the solution I need to complete the design. A fresh pair of eyes usually helps!

- (1) Which of the items below fills in the blank ( 1 ) in the best possible way? Choose one item from the choices below and mark the number on your Answer Sheet.

1 margins                      2 possibilities                      3 restrictions                      4 variations

- (2) Put the words in the underlined part (2) into the correct order. Mark the numbers correctly, from top to bottom, on your Answer Sheet.

- (3) Which of the items below fills in the blank ( 3 ) in the best possible way? Choose one item from the choices below and mark the number on your Answer Sheet.

1 inconvenience                      2 inspiration                      3 medium                      4 reward

(4) Put the words in the underlined part (4) into the correct order. Mark the numbers correctly, from top to bottom, on your Answer Sheet.

(5) Which of the items below fills in the blank ( 5 ) in the best possible way? Choose one item from the choices below and mark the number on your Answer Sheet.

1 debt                      2 freedom                      3 need                      4 responsibility

(6) What does the underlined part (6) refer to in the context? Choose one from the choices and mark the number on your Answer Sheet.

- 1 a critical eye that finds one's work reaching nowhere near the goal
- 2 the constant effort to remain as loyal to the initial plan as possible
- 3 an unexpected course in which changes are made on the original idea
- 4 a positive attitude that enables one to produce one design after another

3

Read the following sentences and passages with blanks and choose one item from the choices below in order to fill in each blank and complete them in the best possible way. Mark the numbers on your Answer Sheet. (16 points)

- (1) Most scientists take it for granted that the laws of nature are ( 1 ). They have always been the same as they are today, and will be for ever.

1 fixed                      2 flexible                      3 momentary                      4 unreliable

- (2) Flap your arms and see if you fly. Chances are, you won't. The downward pressure of your arms on the air, and the equal and opposite reaction upward, are not enough to lift your weight ( 2 ) gravity.

1 against                      2 along                      3 toward                      4 without

- (3) Drop a bit of black ink into a tub of water. The ink spreads out and eventually makes the water gray. Will a tub of gray water ever clear up and produce a small drop of ink? Not impossible, but very ( 3 ).

1 frequently                      2 smoothly                      3 timely                      4 unlikely

- (4) What separates science from all other human activities is its belief in the temporary nature of all conclusions. In science, knowledge is fluid and certainly fleeting. That is the heart of its ( 4 ). But it is also its greatest strength.

1 cooperation                      2 destination                      3 inflation                      4 limitation