

I 次の英文を読み、下の問いに答えよ。(35点)

[1] Some people have extraordinary memories. According to the Guinness World Records™ 2001, Gert Mittring of Germany can look at a list of 27 numbers for just four seconds and remember all of them. Most people, though, have trouble at times remembering where they put their door keys, or recalling the names of people they've recently met for the first time.

[2] The process by which we store and retrieve\* information in our brains has been the focus of scientific research for many years. The brain is a highly complex organ that is not fully understood, and theories about how it works remain a topic of debate. It is generally agreed, though, that one area of the brain known as the hippocampus — named after the Latin word for “seahorse\*” because of its curved shape — is important in the process of recalling information. When we experience something, the information is sent via our senses to the hippocampus, where it is processed.

[3] Although the process of creating memories is only partially understood, it is thought to involve three main steps. Scientists believe that brain cells called neurons\* first transform the sensory stimuli\* we experience into images in our immediate memory. Then, these images are sent to the hippocampus and stored temporarily in short-term memory. In the hippocampus information is organized, and it is during this process that parts of the image of our experience fade away. Finally, certain information is then transferred to long-term memory in a section in the frontal lobe\* of the brain known as the cerebral cortex\*. Scientists think this process may happen while we are sleeping, but exactly how the information is transferred from one area of the brain to another is a mystery.

[4] Although memory function is difficult to understand and analyze, memory loss is something that many people experience and worry about as they age. In the past, neuroscientists\* believed that age-related memory loss

was associated with total numbers of brain cells. The theory was that the brain contained a finite\* number of neurons, and as we got older, we used up our stock of available cells. More recent research suggests that this may not be so and that neurogenesis, or the manufacture of new brain cells, may take place throughout a lifetime. Also, there is now evidence that damage to the hippocampus may play an important role in memory loss. Studies conducted on patients who have suffered damage to this area of the brain show that while they can still recall memories stored before the brain was damaged, they are unable to remember new facts. In addition, diseases associated with old age, such as Alzheimer's, and other problems involving short and long-term memory loss, are now being traced to possible damage to the hippocampus.

[ 5 ] Research suggests that the power to retrieve information can be influenced by food and sleep. Vitamin E is, for example, able to break down chemicals, known as free radicals, that are thought to damage brain cells. Studies suggest that eating foods containing vitamin E, such as green vegetables, is one way of reducing age-related memory loss. Though there is no definitive\* proof, there are others who believe that herbs such as ginseng and ginkgo help to improve both concentration and memory retention\*. Research on short-term memory indicates that getting a good night's sleep can also help one to recollect things more clearly.

[ 6 ] Although the exact process by which memories are coded and retrieved remains a mystery, there is no doubt that eating the right foods and getting sufficient amounts of sleep can help us make the best use of our brains' remarkable ability to store and recall information.

*retrieve	取り出す
seahorse	タツノオトシゴ
neurons < neuron	神経細胞
sensory stimuli	感覚刺激
< sensory stimulus	
frontal lobe	前頭葉
cerebral cortex	大脳皮質
neuroscientists	神経科学者
< neuroscientist	
finite	有限の
definitive	決定的な
retention	維持

問 本文の内容を踏まえて、次の英文 (A)~(G) の空所  ~  に入れるのに最も適当なものを、それぞれ下の①~④のうちから選べ。

(A) According to the first paragraph,  .

- ① even those with extraordinary memories have difficulty recalling the names of people they have just met
- ② the Guinness World Records™ 2001 lists a person who memorized 27 numbers in just four seconds
- ③ some people can attain extraordinary memory skills with effort
- ④ few people have experienced difficulty remembering simple things in their daily lives

(B) According to the second paragraph, 2 .

- ① little is known about the important role the hippocampus plays in the process of recalling information
- ② despite years of scientific research, nothing is known about the human brain
- ③ the hippocampus of the brain is curved like a seahorse
- ④ when we experience something, our senses make and store the hippocampus

(C) According to the third paragraph, 3 .

- ① the frontal lobe stores the immediate memory images in short-term memory
- ② brain cells called neurons first create images of the hippocampus
- ③ there is still uncertainty about how memories are created in the brain
- ④ the cerebral cortex in the hippocampus stores specific information in permanent memory

(D) According to the fourth paragraph, 4 .

- ① injury to the hippocampus will make it impossible to recall memories prior to the damage
- ② recent research suggests that new brain cells may be generated until the end of life
- ③ since the number of brain cells is limited, the best way to preserve memories is to avoid losing the brain cells
- ④ the brain is not related to illnesses associated with short and long-term memory loss

(E) According to the fifth paragraph, 5 .

- ① some foods have the possibility of reducing age-related memory loss
- ② a good night's sleep increases free radicals that damage brain cells
- ③ most herbs have been scientifically proven to help maintain memory
- ④ vitamin E is known to break down chemicals and damage the brain

(F) In the sixth paragraph, the author states that 6 .

- ① our brains' ability to store and recall information affects the amount of sleep we get
- ② scientists have revealed the mysterious process by which memories are coded and retrieved
- ③ the brain's ability depends not on the quality but the quantity of foods we eat
- ④ there are known ways to take advantage of our brain's ability

(G) This article 7 .

- ① does not tell us how we can improve the working of our brain
- ② explains what we know so far about how memory works
- ③ predicts that the mystery surrounding the brain will be solved very soon
- ④ says very little about different parts of the brain and their functions

II 次の英文の空所 8 ~ 12 に入れるのに最も適当なものを、それぞれ下の①～④のうちから選び、会話文を完成せよ。(20点)

*Megan, a university student, is talking to her roommate, Amy, an international student from Asia.*

Megan: Have you decided your major yet?

Amy: Not quite. I am still 8 different options. What about you?

- ① corresponding
- ② exchanging
- ③ exploring
- ④ transferring

Megan: I am 9 English literature, but journalism also seems interesting.

- ① leaning towards
- ② leaping from
- ③ learning at
- ④ leaving for

Amy: English literature and journalism are both fascinating to me. What about them is 10 to you?

- ① attractive
- ② noble
- ③ destructive
- ④ horrible

Megan: I have always been impressed by the power of language, and both English literature and journalism offer unique perspectives on that. How about you?

Amy: I've always been interested in programming, so I think computer science and technology feel like a 11 for me, but I like electrical engineering, too.

- ① high tide
- ② major strike
- ③ natural fit
- ④ normal ride

Megan: That's so cool! Have you thought about applying for a double major program?

Amy: Up until now, no. I am wondering who to ask for academic advice.

Megan: You should 12 up for the International Student Advisory Program. I hear they provide in-person and online meetings.

- ① break
- ② hang
- ③ sign
- ④ write

Amy: That would be perfect! I also love mathematics, so maybe they can help me figure that out as well.

Megan: I think you might even pursue a triple major! You go!

Ⅲ 次の英文 (A)~(E) の空所 13 ~ 17 に入れるのに最も適当なものを、  
それぞれ下の①~④のうちから選べ。(15点)

- (A) John was listening to the music with his eyes ( 13 ).  
① close                      ② closed                      ③ been closed                      ④ to close
- (B) ( 14 ) the map, we would have been completely lost.  
① But                      ② Still                      ③ Unless                      ④ Without
- (C) This bag is ( 15 ) that one.  
① as heavier as twice                      ② as twice heavy as  
③ twice as heavy as                      ④ twice heavier as
- (D) ( 16 ) pleased us most was his willingness to help us.  
① That                      ② What                      ③ When                      ④ Whom
- (E) You must be a hard worker, ( 17 ) so much work in just one day.  
① finish                      ② finished  
③ finishing                      ④ have finished

IV 次の英文 (A)~(E) の空所 18 ~ 22 に入れるのに最も適当なものを、  
それぞれ下の①~④のうちから選べ。(10点)

(A) This food is a specialty in Tokyo, so it is not easily ( 18 ) in the USA.  
① able                      ② available                      ③ capable                      ④ reliable

(B) Heavy traffic is ( 19 ) long delays on the freeway.  
① gaining                      ② acquiring                      ③ requiring                      ④ causing

(C) At the award ceremony, I was honored to be treated with great  
( 20 ) and respect by the audience.  
① cruelty                      ② dignity                      ③ anxiety                      ④ possibility

(D) Considering the magnitude of the disaster, they ( 21 ) need more  
help.  
① fluently                      ② brilliantly                      ③ obviously                      ④ originally

(E) Some people have a negative ( 22 ) of purchasing expensive items  
over the Internet.  
① construction                      ② infection                      ③ perception                      ④ revolution

V 次の文 (A)~(E) を、与えられた語(句)を用いて英文に訳したとき、空所 **23** ~ **32** に入れるのに最も適当なものを、それぞれ下の①~⑦のうちから選べ。ただし、文頭に来る語(句)も小文字になっている。(20点)

(A) 地価が急に上昇し、多くの人が自分の家をもう買えなくなっています。

Land prices have risen so rapidly ( ) ( **23** ) ( ) ( **24** )  
( ) ( ) ( ) own homes.

- ① afford            ② buy            ③ can no longer  
④ many people    ⑤ that           ⑥ their           ⑦ to

(B) 他の人が何と言おうと、自分の信念を貫くことが大切です。

It is important to ( ) ( **25** ) ( ) ( ) ( **26** )  
( ) ( ) .

- ① hold on to       ② matter       ③ no            ④ others  
⑤ say            ⑥ what       ⑦ your beliefs

(C) すべての思い出は、時間の経過とともに色あせます。

( ) ( ) ( ) ( **27** ) ( ) ( ) ( **28** ) on.

- ① as            ② away       ③ fade  
④ all memories   ⑤ roll       ⑥ the           ⑦ years

(D) その政策が日本の経済に大きな影響を与えるかどうかはまだわかりません。

( ) ( **29** ) ( ) ( ) ( ) ( **30** ) ( ) will  
have a significant impact on Japan's economy.

- ① be            ② it            ③ remains      ④ seen  
⑤ the policy    ⑥ to           ⑦ whether

(E) 私はこの歌を聞くといつも学生時代を思い出します。

I (        ) ( **31** ) (        ) (        ) (        ) ( **32** ) (        ) school  
days.

- ① can't                      ② listen to                      ③ my  
④ remembering              ⑤ song                              ⑥ this                              ⑦ without