(平成 21 年度前期日程)

# 外　国　語

## (英　語)

90　分

**注　意　事　項**

1. 試験開始の合図までこの冊子を開かないこと。
2. 本問題冊子は 6 ページ，答案用紙は 2 ページである。
3. 各答案用紙の上の枠内には，**受験番号**を記入し，その右側の枠内には，受験番号の**下 2 桁**の数字を忘れずに記入すること。
4. 解答はすべて各答案用紙の所定の欄に記入すること。
5. 答案用紙の冊子は切りはなさないこと。
6. 答案用紙に記入する受験番号の数字の字体は，下記の例にならい，明瞭に記入すること。

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試験問題は，つぎのページより始まります。

**I** 次の英文を読んで，以下の設問に答えよ。(80 点)

History suggests that a burst of creative inspiration, or even the solution to a puzzling problem, can spring from the unconscious work of sleep.

Dmitry Mendeleev* credited his discovery of the periodic table to a dream that showed him where to place the elements. Friedrich August Kekulé von Stradonitz** was able to see the ring shape of benzene*** in a vision of a snake biting its tail. And Otto Loewi****, the Nobel Prize winner, said the idea for his prizewinning frog-heart experiment that proved the concept of chemical neurotransmission came to him in a dream.

Loewi famously woke up in the middle of the night to write down his idea, then went to bed and woke up hours later, unable to ( ① ) his own handwriting. Only when he went to sleep the next night did the idea return to him in a second dream.

"This time I did not take any risk," he later wrote. "I got up immediately, went to the laboratory, made the experiment on the frog's heart, and at five o'clock the chemical transmission of nervous impulse was proved."

Were these exceptional cases merely lucky accidents or the most notable examples of sleep's ability to ( ② ) insight? Dismiss them if you choose. But the strongest explanation offered by science is that sleep and dreams have powerful effects on the organization and storage of memories that we're only now beginning to understand. Our ability to get to information stored in our memories — both consciously and unconsciously — is a crucial part of problem solving, and (1) getting to those memories is apparently where sleep comes in.

During sleep, the brain does a lot of heavy lifting. Memories are brought together. Things that we've seen during the day are made into new solid memories. And (2) information is moved from short-term storage to long-term storage, where it can be accessed later for the task at hand. Studies that

examine patterns of brainwave activity during sleep and dreaming have hinted at this strongly, but it's also been illustrated in more direct ways.

One of the best examples was a 2004 study in the journal *Nature* that involved training several groups of college students to ( ③ ) a memory experiment. Each student learned two rules for converting a string of eight numbers into a new string of numbers, and each group was tested once after training and then again eight hours later. No one was told, though, that (3) there was a third, hidden rule that could reduce the steps in the calculation, allowing the problem to be solved immediately.

Sixty percent of the students who were allowed to sleep in the interval figured out the hidden rule. But only 22 percent of those who stayed awake — some through the night, others through the day — discovered it. At the same time, another group that slept for eight hours without being trained was never able to figure out the rule, suggesting that sleeping helped only if memories of the task were formed first.

What the study demonstrated pretty convincingly is that new memories are manipulated during sleep in a way that stimulates insight, which then filters into consciousness. (4) このことがどのようにして起こるのか，また脳のどの領域が関わっているのか，まだ知られていない。 Scientists have learned that explicit memory tasks are usually associated with deep stages of sleep. But some evidence suggests that insight is acquired in dreams, which occur in the rapid eye movement (REM) stage of sleep. It may be that both contribute to the process in different ways.

Whatever the mechanisms behind creative sleep, if a crucial exam or a big presentation is before you, or a complicated problem is weighing on your mind, (5) it might be best to sleep on it.

*Dmitry Mendeleev　ロシアの化学者(1834–1907)

**Friedrich August Kekulé von Stradonitz　ドイツの化学者(1829–96)

***benzene　ベンゼン

****Otto Loewi　ドイツ生まれの米国の薬理学者(1873–1961)

I — 1. 空欄①～③に入れるのにもっとも適したものを次の選択肢から選び，記号で答えよ。

(イ) carry out

(ロ) make sense of

(ハ) open the door to

(ニ) round off

(ホ) settle in

I — 2. 下線部(1)の意味を，文脈をふまえて 70 字以内の日本語で説明せよ。

I — 3. 下線部(2)，(3)を日本語に訳せ。

I — 4. 下線部(4)を英語に訳せ。

I — 5. Read the underlined part (5), and explain in English why the author believes “it might be best to sleep on it.”

## Ⅱ　次の英文を読んで，以下の設問に答えよ。(70 点)

Reflection may be the pivotal way we learn. Consider some of the ways of reflecting: looking back, dreaming, talking it out, watching last week's game, asking for advice, going on retreats — even telling jokes. Jokes are a way of making whatever-it-was understandable and acceptable.

(1) Unfortunately, too often it is people's failures that get them to reflect on their experiences. When you're going along and everything is working well, you don't sit down and reflect, which is exactly the moment when you should do it. If you wait for a giant mistake before you reflect, two things happen. One, since you're down, you don't get the most out of it, and two, you tend only to see the mistake, instead of all the moments in which you've also been correct.

It's true. Most of us are shaped more by negative experiences than by positive ones. A thousand things happen in a week to each of us, but most of us remember the few lapses rather than our triumphs, because we don't reflect. We merely react. Playwright Athol Fugard* said that (2) he worked his way out of a depression by starting every day thinking of ten things that gave him pleasure. Thinking of the small pleasures around one — the glow of the morning light on the ocean, the fresh roses, the drink waiting at the end of a morning walk, even the dog that wants to be fed — is a much better way to deal with a perceived failure than to spend time thinking about it. When you're down, think of the things you have to look forward to. (3) 失敗のショックから何とか立ち直ったとき，その失敗についてじっくり考える心構えができるのだ。

In fact, mistakes contain powerful lessons — but only if we think them through calmly, see where we went wrong, mentally revise what we're doing, and then act on the revisions. When great batters strike out in a baseball game, they don't linger for a moment over the setback, but instead set about to improve their stance or swing. And great batters do strike out — Babe Ruth** not only set a home run record, he set a strikeout record as well. Think what a great batting

average is: .400. This means a great batter fails to get a hit more than half the time. Most of the rest of us, on the other hand, are paralyzed by our mistakes. We're so haunted by them, so afraid that we're going to do the same thing again, that we become fearful of doing anything. When horseback riders are thrown, they get back on the horse, because they know if they don't, their fear may stop them. Most of us have lesser fears to face, but most of us have to cope with them through thought, before we act again. Reflection comes first, and then positive action. Reflection permits us to process our feelings, understand them, resolve our questions, and get on with our work.

The point is (4) not to be the victims of our feelings, jerked this way and that by unresolved emotions, not to be used by our experiences, but to use them and to use them creatively. Just as writers turn experiences from their lives into novels and plays, we can each transform our experiences into something practical and usable. Isak Dinesen*** said, "Any sorrow can be borne if we can put it in a story." Your total experience becomes your life, and (5) that base is solid and sound to the degree that you have reflected on it, understood it, and arrived at a workable resolution.

*Athol Fugard　南アフリカ共和国の劇作家。1932年生。

**Babe Ruth　米国の野球選手で国民的英雄(1895–1948)。本名はGeorge Herman Ruthで，主な記録は生涯本塁打数714本，生涯打率.342(3割4分2厘)。

***Isak Dinesen　デンマークの作家(1885–1962)。

Ⅱ— 1. 下線部(1)を日本語に訳せ。

Ⅱ— 2. 下線部(2)を日本語に訳せ。

Ⅱ— 3. 下線部(3)を英語に訳せ。

Ⅱ— 4. 下線部(4)とはどういうことか，本文中の具体例を用いて 50 字以内の日本語で説明せよ。

Ⅱ— 5. 下線部(5)を日本語に訳せ。