平成21年度　入学試験問題

外　国　語

英　語

2月25日(水)　10：00—11：45

(全学部共通)

注　意　事　項

1. 試験開始の合図があるまで，この冊子と答案紙を開いてはいけない。
2. 問題冊子のページ数は，10ページである。
3. 問題冊子とは別に答案紙が4枚ある。
4. 落丁，乱丁，印刷不鮮明の箇所などがあったら，ただちに申し出よ。
5. 解答にかかる前に答案紙左端の折り目をていねいに切り離し，答案紙のそれぞれの所定の2箇所に受験番号を記入せよ。
6. 解答は答案紙の所定の欄に記入せよ。所定の欄以外に書いた答案は無効である。
7. 答案紙の右寄りに引かれた縦線より右の部分には，受験番号のほかは記入してはいけない。
8. 問題冊子の余白は草稿用として使ってもよい。
9. 試験終了後退室の許可があるまでは，退室してはいけない。
10. 答案紙は持ち帰ってはいけない。問題冊子は持ち帰ってもよい。

I　次の英文を読み，設問に答えよ。

（＊の付いた語句は注を参照すること）

The brain is often envisioned as something like a computer, and the body as its all-purpose tool. But a growing body of new research suggests that something more collaborative is going on — that we think not just with our brains, but with our bodies. A recent series of studies has shown that children can solve math problems better if they are told to use their hands while thinking. Another recent study suggested that stage actors remember their lines better when they are moving. And in one study published last year, (1) a group of people asked to move their eyes in a specific pattern while puzzling through a logical problem were twice as likely to solve it.

The term most often used to describe this new model of mind is "embodied cognition," and its champions believe it will open up entire new avenues for understanding — and enhancing — the abilities of the human mind. (2) Some educators see in it a new paradigm for teaching children, one that privileges movement and simulation over reading, writing, and reciting. Specialists in rehabilitative medicine could potentially use the emerging findings to（ ア ）patients recover lost skills after a stroke or other brain injury. The greatest impact, however, has been in the field of *neuroscience itself, where embodied cognition threatens age-old distinctions — not only between brain and body, but between perceiving and thinking, thinking and acting, even between reason and instinct — on which the traditional idea of the mind has been built.

"It's a revolutionary idea," says Shaun Gallagher, the director of the cognitive science program at the University of Central Florida. "In the embodied view, if you're going to explain cognition it's not enough just to look inside the brain. In any particular instance, (3) what's going on inside the brain in large part may depend on what's going on in the body as a whole, and how that body is situated in its environment."

Or, as the motto of the University of Wisconsin's Laboratory of Embodied Cognition puts it, *Ago ergo cogito*: "I act, therefore I think."

The emerging field builds on decades of research into human movement and gesture. Much of the earlier work looked at the role of gestures in communication, asking whether gesture grew out of speech or exploring why people gestured when they were talking on the telephone.

But today, neuroscientists, linguists, and philosophers are making much bolder claims. A few argue that human characteristics like empathy, or concepts like time and space, or even the deep structure of language and some of the most profound principles of mathematics, can ultimately be traced to the *idiosyncrasies of the human body. They argue that (4) if we didn't walk upright or weren't warm-blooded, we might understand these concepts totally differently. The experience of having a body, they argue, is intimately tied to our intelligence.

"If you want to (イ) a computer to play chess, or if you want to design a search engine, the old model is OK," says Rolf Pfeifer, director of the artificial intelligence lab at the University of Zurich, "but if you're interested in understanding real intelligence, you have to deal with the body."

Embodied cognition *upends several centuries of thinking about thinking. *René Descartes, living in an age when steam engines were novelty items, envisioned the brain as a pump that moved "animating fluid" through the body — *head-shrinkers through the ages have tended to enlist the high-tech of their day to (ウ) the human cognitive system — but the mind, Descartes argued, was something else entirely, an *incorporeal entity that interacted with the body through the *pineal gland.

While a few thinkers challenged Descartes' mind-body separation, it remained the dominant model up through the 20th century, though its form evolved with the times. After the development of the modern computer in the years after World War Ⅱ, a new version of the same model was adopted, with the brain as a computer and the mind as the software that ran on it.

In the 1980s, however, a group of scholars began to (エ) this approach. Fueled in part by broad disappointment with artificial intelligence research, they argued that human beings don't really process information the way computers do, by manipulating abstract symbols using formal rules. In 1995, a major biological discovery brought even more enthusiasm to the field. Scientists in Italy discovered "mirror neurons" that respond when we see someone else performing an action — or even when we hear an action described — as if we ourselves were performing the action. By simultaneously playing a role in both acting and thinking, mirror neurons suggested that the two might not be so separate after all.

(出典：Drake Bennett, "Don't just stand there, think," *The Boston Globe*, January 13, 2008 より。出題の都合上，原文の一部に変更を加えている。)

注

neuroscience　神経科学
idiosyncrasy　特質，特異性
upend　ひっくり返す
René Descartes　ルネ・デカルト(フランスの哲学者・数学者)
head-shrinker　精神科医
incorporeal　実体のない，無形の
pineal gland　松果腺，松果体

設　問

1　下線部(1)を日本語に訳せ。
2　下線部(2)の中の it が示すもっとも適切な連続した 5 語を本文中から英語で抜き出せ。
3　下線部(3)を日本語に訳せ。
4　下線部(4)を日本語に訳せ。
5　下線部(5)を日本語に訳せ。

6　空欄(　ア　)～(　エ　)に入るもっとも適切な単語の組み合わせを．下から一つ選びその数字を書け。

1	(ア)	teach	(イ)	help	(ウ)	describe	(エ)	contest
2	(ア)	help	(イ)	describe	(ウ)	contest	(エ)	teach
3	(ア)	contest	(イ)	teach	(ウ)	help	(エ)	describe
4	(ア)	describe	(イ)	help	(ウ)	contest	(エ)	teach
5	(ア)	help	(イ)	contest	(ウ)	teach	(エ)	describe
6	(ア)	help	(イ)	teach	(ウ)	describe	(エ)	contest

Ⅱ　次の英文を読み，設問に答えよ。

（＊の付いた語句は注を参照すること）

Abraham Darby arrived in *Coalbrookdale with a mission in mind: to produce cheap iron using coal — in the form of coke — as a fuel. His success was foundational to the Industrial Revolution, allowing the production of less expensive iron and so enabling the construction of railways, steamships and industrial machinery, not to mention the famous iron bridge built by Darby's grandson near Coalbrookdale. A stroke of genius?

(1) Hardly. Economic historian Robert Allen points out that Darby's pivotal invention was a simple response to economic incentives. Existing iron *smelters used wood; it did not need an Einstein to think of *chucking coal in the *furnace instead. What it required was a supply of the world's cheapest coal to make the project worthwhile, and that is exactly what Coalbrookdale's mines provided. Once he worked out that the economics were viable, Darby simply commissioned researchers to experiment, solve the technical problems, and make (2) his project a reality. And even after Darby's invention was tried and tested, it did not spread to mainland Europe, for the simple reason that Europe's coal was too expensive; most of it was shipped over from Newcastle in England anyway. Coke smelting in France or Germany was technologically possible, but just not profitable for 150 years.

This seems like an unusually straightforward case, but on closer inspection the same turns out to be true of many of the Industrial Revolution's technological advances. Cotton-spinning machinery, for example, did not require any scientific knowledge, just a careful process of development and experimentation plus a little creativity: legend has it that the *spinning jenny was inspired by a traditional medieval spinning wheel that fell over and kept spinning while lying on the ground. The inventors of spinning machines such as the spinning jenny and the *water frame launched serious research programs; they knew exactly what

they hoped to achieve, and just needed to solve a series of modest engineering problems.

(3) They expended this considerable effort rationally — and those in France or China rationally did not — because the financials added up: Allen's calculations show that British workers were at that time the most highly paid in the world, whether measured against the price of silver, of food, of energy, or of capital. That meant that they were big consumers of imported cotton, but also that a labour-saving device would *pay dividends. In Britain, a spinning jenny cost less than five months' wages, while in low-wage France it cost more than a year's wages. (4) It was cheap French labour that accounted for the machine's slow adoption on the continent, not the superior scientific ingenuity of the British.

That was even more true of steam engines. They were, unusually for Industrial Revolution technology, based on an actual scientific advance: Galileo discovered that atmosphere had weight and so could exert pressure. Yet the practical invention took place in Britain, not in Galileo's Italy, and again, the reason was not genius but the fact that labour was expensive and fuel was incredibly cheap. Allen calculates that, in terms of *thermal units per hour, wages in Newcastle in those days were perhaps ten times higher than those in continental cities such as Paris and Strasbourg. Labour in China was even cheaper. By the same reckoning, London wages were three times higher than those in continental cities and six or seven times those in Beijing. (5) It's no surprise that the steam engine, a device for replacing labour with coal, was a British invention.

All this shows that many of the important innovations of the Industrial Revolution were calculated and deliberate responses to high British wages and cheap British coal. The cheap coal was an accident of geography, but the wages weren't. Our historical detective story leads us to another question: (6) _____

(出典：Tim Harford, *The Logic of Life: Uncovering the New Economics of Everything*, Little, Brown より。出題の都合上，原文の一部に変更を加えている。)

注

Coalbrookdale　イングランド西部の地名
chuck　投げる
spinning jenny　ジェニー紡績機
pay dividends　後で元がとれる
smelter　精錬所
furnace　炉
water frame　水力紡績機
thermal unit　熱量単位

設　問

1　下線部(1)が意味する具体的内容を，文脈を踏まえて 20 字以内の日本語で述べよ。

2　下線部(2)の内容を表すもっとも適切な連続した 4 語を本文中から英語で抜き出せ。

3　下線部(3)の内容を表すもっとも適切な連続した 5 語を本文中から英語で抜き出せ。

4　下線部(4)を日本語に訳せ。

5　下線部(5)のように言えるのはなぜか，もっとも適切な理由を二つ日本語で述べよ。

6　下線部(6)に入るもっとも適切な疑問文を，下から一つ選びその数字を書け。

1　who invented the steam engine?
2　what invention came next?
3　where did British coal come from?
4　when did the Industrial Revolution begin?
5　why were wages so high?
6　how did Abraham Darby die?

Ⅲ　次の英文を読み，下線部(1)～(5)を英語に訳せ。

The following dialogue is a telephone conversation between two American university students, Mary and Jane.

Mary: Hello?

Jane: Hi, Mary. This is Jane.

Mary: Oh, Jane, hi. What's up?

Jane: I was just wondering if you're free this Saturday.

Mary: Oh, I'm sorry, Jane, but I'm terribly busy all this week.

Jane: Really?

Mary: Yes. (1)月曜日の朝までにミルトン先生の化学の授業のレポートを終わらせないといけないの。

Jane: But I thought the deadline was today. I've just handed mine in.

Mary: Well, yes it is, but she let me have an extension.

Jane: You're kidding. Why?

Mary: Because I wanted to include some results from my latest experiments and I needed to do a lot of calculations. (2)きのう講義の後で先生に聞いたら，大丈夫だって言ってくれたのよ。

Jane: You're really working hard on these experiments.

Mary: Not really, I'm just very interested in Professor Milton's subject.

Jane: Well anyway, how about next weekend? Will you be free then?

Mary: Yes, sure. That would be perfect. I'll be ready to have some fun then. What do you have in mind?

Jane: Well, you see, a few friends and I have started a new volunteer group to try and clean up our campus, and I thought you might be interested in joining us.

Mary: Oh, I see. Well, what exactly do you do?

Jane: (3)毎週土曜日の朝に，キャンパスを回って，ゴミを拾うのよ。 We recycle plastic, paper and aluminum cans by selling them to recycling companies and we donate the money we get to environmental charities.

Mary: That's interesting. But how long does it take?

Jane: Oh, not long. We usually finish by about eight o'clock.

Mary: That's pretty late. Does it take all day, then?

Jane: No, I mean eight o'clock in the morning. We start at six.

Mary: So early?

Jane: Yes.

Mary: Well, I'm not sure ...

Jane: (4)でもそうすると，その日の残りは，まだ他のことができるでしょう。

Mary: Oh, I guess that's all right then. So we can have some fun afterwards.

Jane: Sure. We usually go and have breakfast at Bob's Diner together when we've finished. If you come, then maybe after breakfast we could go to the new exhibition at the Science Museum.

Mary: That's just where I wanted to go.

Jane: OK, so will you join us then? (5)もしよかったら，アパートまで車で迎えに行くわ。

Mary: Well, I'm not sure. Can we talk about it next week after Professor Milton's class?

Jane: Fine. I'll let you think it over, and see you in class.

Mary: Yes, see you then. Bye, Jane.

Jane: Bye, Mary. And good luck with your calculations.

Mary: Thanks Jane. Bye.

Ⅳ　次の文章を読み，下線部(1)～(3)を英語に訳せ。

自分をきちんとわかっていない人ほど，自分はできる，自分は偉いと思いがちなものです。世の中を広く見渡せば，自分の能力に多少自信を持っていたとして，(1)それ以上に能力がある人がいくらでもいることはわかるはずです。

いろいろなことを知れば知るほど，教養を積めば積むほど，自分が知らないことがいかにたくさんあるのかを痛感するようになります。そこで，もっといろいろなことを学ばなければならないとわかるわけです。しかし，ものを知らないと，自分が知らないということさえもわからなくなってしまいます。

そして世の中には，自分とは違った多様な価値観を持った人たちがいます。(2)自分の価値観だけが絶対だと思い込むことは危険なことです。ですから，つねに自分の考え，自分の価値観を相対化してみるという客観性は必要です。

(3)そうした客観性がなければ，自分をうまくアピールして，他人を説得することはできません。そのためには，自分にも足らないところがあることはきちんと認める必要があります。

(出典：樋口裕一『自分クリエイト力』講談社より。出題の都合上，原文の一部に変更を加えている。)