医　学　部

2019年度一般入学試験(前期)

英　　語　(問　題)

注　　意

1)　英語の問題冊子は14ページあり，問題は5問である。白紙・空白の部分は下書きに使用してよい。

2)　別に解答用紙1枚があり，解答はすべてこの解答用紙の指定欄に記入すること。指定欄以外への記入はすべて無効である。

3)　解答用紙の所定欄に次のとおり受験番号を記入しなさい。氏名を記入してはならない。

・一般入試のみを志願する受験者は一般の欄に受験番号を記入する。

・併用入試のみを志願する受験者は併用の欄に受験番号を記入する。

・一般入試と併用入試の両方を志願する受験者は一般と併用の両方の欄にそれぞれの受験番号を記入する。

なお，記入した受験番号が誤っている場合や無記入の場合は，英語の試験が無効となる。

また，＊印の欄には何も記入してはならない。

4)　問題冊子は持ち帰ること。

5)　解答用紙は持ち出してはならない。

6)　試験終了時には，解答用紙を裏返しておくこと。解答用紙の回収後，監督者の指示に従い退出すること。

I *For the questions numbered 1 through 5, select the word which does NOT contain the same pronunciation as the underlined part of the leftmost word and answer by the letter 'ア' through 'エ'.*

1	circus	ア	dirty	イ	stir
		ウ	starve	エ	worth
2	wool	ア	bosom	イ	hood
		ウ	wolf	エ	bloom
3	roast	ア	loan	イ	toast
		ウ	abroad	エ	approach
4	reference	ア	reserve	イ	rescue
		ウ	remedy	エ	resolute
5	meant	ア	tread	イ	treat
		ウ	threat	エ	breath

For the questions numbered 6 through 10, select the word whose syllable with primary stress is pronounced the same as the underlined part of the leftmost word. Answer by the letter 'ア' through 'エ'.

6	anxious	ア	appalling	イ	chamber
		ウ	salmon	エ	salt
7	seize	ア	creature	イ	failure
		ウ	gale	エ	rein
8	triumphant	ア	curiosity	イ	trial
		ウ	infancy	エ	discovery
9	jealous	ア	genuine	イ	heal
		ウ	kneel	エ	treat
10	continuity	ア	currency	イ	numerous
		ウ	contribute	エ	interesting

II *Select the most suitable English expression to fill in the blanks marked* (1) *through* (5) *from the following five choices for each blank and answer by the letter 'ア' through 'オ'.*

Taro : Well, Jenny, where shall we eat tonight?

Jenny : I don't know. There's a new Chinese restaurant opening up in town. (1)

Taro : (2) but that, Jenny. Chinese food is just too fattening and I'm going to stick to my diet.

Jenny : Yeah, but Chinese food is so good.

Taro : It really is good, but I'm going to stick to my diet. How about Japanese?

Jenny : Look, (3)

Taro : I agree that it won't, but I'm going to stick to it. Why don't we try a vegetarian restaurant?

Jenny : In fact, I think it would be psychologically healthy for you to loosen up a little, Taro.

Taro : I can understand your saying that, Jenny, but I really want to lose this weight, so I'm going to stick to my diet. Japanese would be really nice.

Jenny : Taro, (4) It's just a matter of time before you give in. So why not give in now?

Taro : True, most people do give up, but I won't. I'm going to stick to my diet.

Jenny : OK, OK. You want the truth? I'll tell you the truth. I got an introductory coupon for this Chinese restaurant — two for the price of one! — and it expires tonight! If we don't use it now, (5)

Taro : I can see that it will cost extra, Jenny, and you will miss out on this good deal but I'm going to stick to my diet.

Jenny : All right, how about pizza? I hear they have a Friday night special: all you can eat for $5!

1 ア Why won't we try?

イ Why don't we try it out?

ウ Why can't we eat?

エ What do you feel?

オ What about them?

2 ア Yes

イ All

ウ Something

エ Anything

オ Nothing

3 ア your diet won't hurt if you change it once.

イ one day off your diet won't kill you.

ウ it won't hurt to stick to your diet.

エ Japanese diet won't kill you.

オ you won't hurt to change your diet one day.

4 ア everybody sticks to one's diet.

イ everyone sticks to all diet.

ウ no one sticks to no diet.

エ nobody sticks to any diet.

オ I agree with you.

5 ア I might as well throw it out.

イ I might as well throw you out.

ウ I might as well sell it out.

エ I might as well be in trouble.

オ I might hate our diet.

Ⅲ *Fill in each pair of the blanks below with the same English word so that each sentence conveys its appropriate meaning. As for the initial letter, use of uppercase or lowercase does not matter. In the questions* (4), (9), *and* (10), *the following represents a dialogue between John and Mary:*

・ John :
  Mary :

(1) ・Thank you very much for your fast reply. I really ( ) it.
・It was not until he passed away that people began to ( ) the true value of his artworks.

(2) ・Hey, Tom! It's been a ( ). How have you been?
・Oh, are you thinking of studying abroad? Go for it! Strike ( ) the iron is hot, you know.

(3) ・I have to go back to Japan before my visa expires next month. I'll miss you. Let's ( ) in touch.
・Please ( ) in mind that you need to take this medicine three times a day.

(4) ・ John : Thanks so much for the nice present!
  Mary : Oh, it's nothing. Don't ( ) it.
・I love all kinds of animals, not to ( ) dogs and cats.

(5) ・Now that it's summer vacation, forget about all the work. ( ) out and relax!
・I caught a ( ) because I forgot to wear a coat in the winter night.

(6) ・You know what? I won a lottery yesterday! Let's go to the luxurious restaurant we talked about! It's (　　) me!

・Are you (　　) any medications now? If so, I cannot prescribe this drug for you.

(7) ・This homework was really a (　　) in the neck. It took me forever to finish it!

・Doctor, my headache hasn't gone away for three days. Could you give me some (　　) relievers?

(8) ・I'm so sorry for hurting you. I apologize from the bottom of my (　　).

・It is reported that he died of a (　　) attack.

(9) ・
John : How about going to the park? I'll bring lunch if you bring drinks.
Mary : Sounds nice! It's a (　　)!

・
John : I can't put up with this construction noise any longer. When will it end?
Mary : I know. But you'll just have to (　　) with it.

(10) ・You shouldn't have said such a word in front of kids. Watch your (　　)!

・
John : What is your mother (　　)?
Mary : Japanese.

Ⅳ *Read the following passage and answer the questions that follow.*

From crushed leeches (① : soak) in vinegar to modern chemical compounds, fashionable humans have (② : seek) ways to dye their hair for thousands of years.

It's a messy, stinky process, which researcher Jiaxing Huang, a materials scientist at Northwestern University, compares to (③ : perform) organic chemical synthesis on top of one's head.

Dr. Huang believes he is on the trail of a solution that will make hair coloring easier and possibly safer. In a study published Thursday in the journal *Chem*, Dr. Huang and his colleagues report that graphene, a naturally black material, also makes a successful hair dye.

In an experiment using platinum blond hair samples and wigs, the researchers coated hair with a graphene solution ④ that included water, vitamin C and a polymer to improve adhesion. They reported (⑤ : create) a natural-looking black hair shade (in contrast to the shoe-polish look that many women complain of), and that's been something of a challenge to achieve in the hair-dye industry.

The new method stayed on after 30 washings, the number necessary (⑥) a hair dye to be considered permanent.

"Your hair is covered in these cuticle scales like the scales of a fish, and people have to use ammonia or organic amines to lift the scales and allow dye molecules to get inside," said Dr. Huang, in an interview. "But lifting the cuticle makes the strands of the hair more brittle, and the damage is only exacerbated by the hydrogen peroxide that is used to trigger the reaction that synthesizes the dye once the pigment molecules are inside the hair."

[⑦ : all / anymore / dyes / hair / not / peroxide / use], but the core chemistry is generally the same, Dr. Huang said.

Graphene is a (⑧)-dimensional sheetlike material made of a single

atomic layer of carbon. It is strong, thin and a great conductor of electricity and heat. When it was discovered in 2004, it was viewed as revolutionary for the electronics industry. But its thin, flexible sheets can adapt to uneven surfaces, which also makes it a good coating material, the study said. An (⑨ : add) advantage is the elimination of static and flyaway hair on dry winter days. Another plus, Dr. Huang said, is that the graphene flakes are too large to be absorbed through the skin, unlike other ingredients generally used today in current dark hair dyes that can penetrate the skin barrier.

"Because we now have a coating-based dye, we don't have to get into the hair or change the chemical structure," he said. "It's a nanomaterial solution to solve a chemistry problem."

Exactly how big a problem it is is not known. The Food and Drug Administration reports that two ingredients that were found to cause cancer in [⑩ : animals / are / hair dyes /in / longer / no /used]. But there are thousands of different chemicals in use, and (⑪) these, many have not been studied either alone or in combination with others.

The F. D. A.'s website is vague on the matter. "We do not have reliable evidence showing a link between cancer (⑫) coal-tar hair dyes on the market today," the agency stated.

The National Cancer Institute notes that some studies have suggested possible links to blood cancers and bladder cancers, while other studies have not found any connection. In a combined analysis of 4,461 women who had non-Hodgkin's lymphoma, and 5,799 women who (⑬) not, researchers found that women who began using hair dye before 1980 had a 30 percent increase risk of non-Hodgkin's lymphoma, compared to those who began using hair dye after 1980. The researchers were not sure if the reduced risk was due to safer dyes, or the fact (⑭) those who began using them after 1980 reflected lower cumulative exposure.

Dr. Huang said he was traveling in Europe when it occurred to him that graphene might work as a hair coloring.

"I got curious, why do people have so many different hair colors, and how do people change their hair color?" he said. "After I looked into this problem I realized there is a significant demand for people to dye their hair black or close (⑮) black."

Dr. Huang said he hopes his finding leads to a useful product.

The total retail sales (⑪) at-home hair coloring products in the United States in 2016 was $1.9 billion, according to Kline & Company, a market research firm.

(New York Times, March 16, 2018. "In Search of the Perfect Hair Dye" By Sheila Kaplan)

1 *Change the verb form in the blanks marked* (①), (②), (③), (⑤), *and* (⑨) *to the appropriate one.*

2 *Translate the underlined word marked* ④ *into Japanese.*

3 *Rearrange the words and phrases in the brackets marked* [⑦] *and* [⑩] *to make correct sentences. No capitalization is done even at the beginning of the sentence. On your answer sheet, write the word or phrase which comes to the* ＊ *positions below.*

[⑦ : all / anymore / dyes / hair / not / peroxide / use]

[⑦ : _____ _____ _____ _____ ＊ _____ _____]

[⑩ : animals / are / hair dyes /in / longer / no /used]

[⑩ : _____ ＊ _____ _____ _____ _____ _____]

4 *Fill in the blank marked* (⑧) *with a number written in English.*

5 *Fill in the blanks marked* (⑥), (⑪), (⑫), (⑬), (⑭), *and* (⑮) *with the most suitable English word to complete each sentence. The numbers may be repeated.*

V *Read the following passage and answer the questions that follow.*

How far would you go to keep your mind from failing? Would you go so far as to let a doctor drill a hole in your skull and stick a microchip in your brain?

It's not an idle (1) question. In recent years neuroscientists have made major advances in cracking the code of memory, figuring out exactly how the human brain stores information and learning to reverse-engineer the process. Now they've reached the stage where they're starting to put all of that theory into practice.

Last month two research teams reported success at using electrical signals, carried into the brain via implanted wires, to boost memory in small groups of test patients. "It's a major milestone in demonstrating the ability to restore memory function in humans," says Dr. Robert Hampson, a neuroscientist at Wake Forest School of Medicine and the leader of one of the teams.

The research is funded by the Defense Advanced Research Projects Agency, which sees brain implants as a life-changing technology for the 270,000 American soldiers who have suffered a traumatic brain injury in combat. The possible applications go much further, however. Brain implants could also change the lives of millions of Americans battling Alzheimer's disease and other cognitive disorders, or even help stave off the mental decline that we all confront as we get older.

"The big story here is decoding: We've finally been able to harness the big (2) data of the human brain," says Dr. Michael Kahana, a professor of psychology at Pennsylvania State University and the leader of the other team that recently reported memory-boosting success. "There's a lot of hype (3) in this field, but that's not hype (3). That's real."

The momentum (4) behind today's brain-implant breakthroughs has been

building at least since 1961, when Dr. William House invented the cochlear implant as a tool for restoring hearing in people with profound deafness. At the time, many of House's colleagues considered the idea of hacking into the auditory nerve absurd. But it worked, and more than 300, 000 patients around the world now use such implants.

Things heated up in 2002, when the U.S. Food and Drug Administration (FDA) approved deep-brain stimulation as a treatment for Parkinson's disease, a neurodegenerative disorder that affects an estimated 10 million people around the world. This treatment, in which a pacemaker-like device directs tiny electrical currents into the brain, has proven to be highly effective at controlling the tremors and rigidity that are a hallmark of Parkinson's.

In addition to Parkinson's, deep brain stimulation is now being used to treat obsessive-compulsive disorder, depression, and epilepsy. "We see people improve by 40 percent or even 70 percent, which is huge," says Dr. Heather Berlin, a cognitive scientist at the Icahn School of Medicine at Mt. Sinai, who has worked extensively with patients affected by cognitive disorders.

Even by the standards of those successes, though, the latest advances in memory implants are remarkable. For the first time, researchers have shown that it's possible not only to suppress electrical misfires in the brain but also (5) enhance one of the brain's highest functions — the ability to encode new memories and later retrieve them.

To sidestep(6) ethical concerns raised by the idea of tampering with people's brains, the Wake Forest and Penn State teams are conducting their research on people with epilepsy who were already slated to receive brain implants.

Tapping into those implants, Kahana's team read the brain signals of 25 test subjects while they performed a simple word-recall memory test. The scientists noted which brains regions were associated with poor memory encoding and then delivered tiny jolts of electricity to selectively disrupt activity in those regions, allowing other regions with correct memory response

(7) dominate.

When the subjects were later tested, their scores in memory tests jumped by an average of 15 percent. "That may not sound like much, but 15 percent is equivalent to 18 years of brain age," Kahana says, adding that it's like rewinding the memory of a 43-year-old to what it was like when she was 25.

"We're not trying to cure disease per se," he says. "We're trying to maintain the nervous system in as close to an optimal state as we can."

At Wake Forest Baptist Hospital, Hampson and his collaborators took an even more audacious (8) approach. They manipulated the memories of 20 test subjects by reaching directly into the hippocampus, a seahorse-shaped structure deep within the brain that is commonly regarded as the seat of memory.

As the subjects completed a test of short-term memory, the researchers recorded the electrical signals associated with correct answers. Then Hampson and company ran a separate experiment in which they delivered those same recorded signals into the brain. When the men and women were subsequently given memory tests, their scores rose by 35 percent.

"It shows that we can apply brain stimulation in a very focused manner — to reinforce the specific codes the brain uses to form memories," Hampson says.

Now that we know it's possible to decode neural activity and boost certain kinds of memories, "we'll do tests with additional patients," Hampson says. "We will learn more about not only how memories are made and stored, but also what distinguishes different types of memories."

A great deal of work remains to be done to make sure memory prostheses (9) work in everyday use — and that they're safe. But already several academic groups and startups are racing to develop stimulators that can handle the brain's big data without requiring the bulky equipment used in the Wake Forest and Penn State experiments. The goal is a system similar to a heart

pacemaker, with the brain implant wired to a small, battery-powered controller surgically inserted under the skin.

"We're hoping to develop a fully implantable device and run trials with that device in the next few years," Kahana says. By 2021, Paradromics, a San Jose-based startup, plans to sell what it calls a "cortical modem," an implant capable of reading out brain states and stimulus signals at a rate of 1 gigabyte of data per second.

If memory-enhancing implants work as expected, potential applications could go far beyond people with traumatic brain injury and Alzheimer's, Kahana says. Eventually, the eligible patients could include those with age-related memory loss — which is to say, pretty much everyone who lives long enough.

"Will neural implants lead to two classes of citizens, enhanced and unenhanced? What if someone can hack into your implant and influence your thoughts and behaviors?" Berlin wonders. "The technology will continue to advance, since it provides real-world benefits, but my children will probably have to confront these questions firsthand."

(NBC News, April 24, 2018. "Memory-boosting brain implants are in the works. Would you get one?" By Corey S. Powell)

1 *In accordance with the passage, put the letter "O" if each of the following sentences is true and "X" if it is not, on your answer sheet.*

① The applications of brain implants are not limited to the soldiers suffering from a brain injury.

② When Dr. William House first invented the way of saving people with hearing difficulties by using implants in inner ears, many of his colleagues praised him for his idea.

③ Shaking in limbs and stiffness are main characteristics of Parkinson's disease.

④ According to Dr. Michael Kahana, if a 60-year-old's score in a memory test rises by 15 %, it is like he or she gets back the memory of a 42-year-old.

⑤ According to the article, some researchers have already succeeded in manipulating their subjects' memory by sending signals directly to their hippocampus.

⑥ Memory-enhancing implants that are fully implantable under the skin including stimulators and controllers, which are similar to heart pacemakers, are already in the market.

⑦ Measures to prevent upcoming discrimination against those who cannot use memory-enhancing implants have already been undertaken.

2 (i) *Select the contextually appropriate meaning of the underlined word marked* (1) *from the following choices and answer by the letter 'ア' through 'エ'.*

ア lazy　　イ not employed

ウ baseless　　エ not in use

(ii) *Select the contextually appropriate meaning of the underlined word marked* (3) *from the following choices and answer by the letter 'ア' through 'エ'.*

ア scientific accomplishment　　イ fairy money
ウ stolen data　　エ exaggerated claims

(iii) *Select the contextually appropriate meaning of the underlined word marked* (4) *from the following choices and answer by the letter 'ア' through 'エ'.*

ア motivation　イ power　ウ instant　エ monument

(iv) *Select the contextually appropriate meaning of the underlined word marked* (6) *from the following choices and answer by the letter 'ア' through 'エ'.*

ア avoid　イ put aside　ウ overcome　エ step on

(v) *Select the contextually appropriate meaning of the underlined word marked* (8) *from the following choices and answer by the letter 'ア' through 'エ'.*

ア advantageous　　イ nice and elegant
ウ clear and convincing　　エ brave and shocking

(vi) *Select the contextually appropriate meaning of the underlined word marked* (9) *from the following choices and answer by the letter 'ア' through 'エ'.*

ア major instruments　　イ linear accelerators
ウ artificial organs　　エ virtual machines

3 *Find the most suitable word that can be substituted for the underlined expression marked* (2) *from the passage.*

4 *Fill in the blanks marked* (5) *and* (7) *with the same English word.*