入 学 試 験 問 題（1次）

外　国　語

平成30年1月22日　　13時10分―14時10分

注 意 事 項

1　試験開始の合図があるまで，この問題冊子を開かないこと。

2　この問題冊子は表紙・白紙を除き13ページである。落丁，乱丁，印刷不鮮明の箇所等があった場合は申し出ること。

3　解答には必ず黒鉛筆（またはシャープペンシル）を使用すること。

4　解答は，各設問ごとに一つだけ選び，解答用紙の所定の解答欄の該当する記号を塗りつぶすこと。

5　解答を訂正する場合は，消しゴムできれいに消すこと。

6　監督員の指示に従って，問題冊子の表紙の指定欄に受験番号を記入し，解答用紙の指定欄に受験番号，受験番号のマーク，氏名を記入すること。

7　この問題冊子の余白は，草稿用に使用してよい。ただし，切り離してはならない。

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受験番号					

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Ⅰ．次の英文を読み，１～８の問いに答えなさい。

Paul Tang was with his wife in the hospital just after her knee replacement surgery, a procedure performed on about 700,000 people in the U.S. every year. The surgeon came by, and Tang, who is himself a primary-care physician, asked when he expected her to be back at her normal routines, (1)〔give〕 his experience with patients like her. The surgeon kept giving vague non-answers. "Finally it hit me," says Tang, "He didn't know." Tang would soon learn that most physicians don't know how their patients do in the ordinary measures of life back at home and at work — the measures that most (2)matter to patients.

Tang still sees patients as a physician, but he's also chief health transformation officer for IBM's Watson Health. That's the business group developing health-care applications for Watson, the machine-learning system that IBM is essentially betting its future on. It could tell a doctor, for instance, how long it took for patients similar to Tang's wife to be walking without pain, or climbing stairs. It could even help analyze images and tissue samples and determine the best treatments for any given patient.

A major cancer center and IBM partnered in 2012. The goal was for Watson to read data about any patient's symptoms, gene sequence, and pathology reports, combine it with physicians' notes on the patient and relevant journal articles, and then help doctors (3)come up with diagnoses and treatments. But they overinflated expectations for the technology. IBM claimed in 2013 that "a new era of computing has emerged" and gave Forbes magazine the impression that Watson would be in use with patients in just a matter of months. In 2015, however, Watson was still busy establishing a "collective intelligence model between machine and man."

To understand what's slowing the progress, you have to understand how machine-learning systems like Watson are trained. Watson "learns" by continually *rejiggering its internal processing routines in order to produce the

highest possible percentage of correct answers on some set of problems, such as which radiological images reveal cancer. The correct answers have to be already known, so that the system can be told when it gets something right and when it gets something wrong. (4) プログラムが練習問題をこなせばこなすほど，的中率は上がっていく。

But for potentially groundbreaking puzzles that go well beyond what humans already do, like detecting the relationships between gene variations and disease, Watson has a (5) chicken-and-egg problem: How does it train on data that no experts have already sifted through and properly organized? "If you're teaching a self-driving car, anyone can label a tree or a sign so the system can learn to recognize it," says Thomas Fuchs, a computational pathologist at a cancer center in New York. "But in a specialized domain in medicine, you might need experts trained for decades to properly label the information you feed to the computer."

Consider, for example, (6) the goal of improving primary care by placing better data at the fingertips of clinicians. When doctors miss chances to treat relatively minor concerns during a routine primary-care visit before (7) a more advanced problem sends patients to an emergency room or a specialist, their health suffers and costs explode. "About one-third of every dollar spent on health is probably unnecessary," says Anil Jain, IBM Watson Health's chief medical officer.

(8) Will Watson eventually make a difference in improving health outcomes and lowering costs? Probably, says Stephen Kraus, a specialist who focuses on health care and has invested in AI health-care startups. "It's all for real," says Kraus. "This isn't about putting out *vaporware in order to boost stock prices." But Kraus joins most experts in cautioning against unrealistic timelines or promises — some of which have come from IBM itself. "This is hard," he says. "It's not happening today, and it might not be happening in five years. And it's not going to replace doctors."

【Source: "A Reality Check for IBM's AI Ambitions", MIT Technology Review [https://www.technologyreview.com/s/607965/a-reality-check-for-ibms-ai-ambitions/], viewed on 2017/7/10】

Glossary:

rejiggering > rejigger：～を再調整する

vaporware：計画や概要が発表されたものの開発が遅れ，いつ完成するかわからないソフトウェアのこと。

1. 下線部(1) [give] の give を適切なかたちにし，以下から選べ。

A. giving

B. gives

C. given

D. gave

2. 下線部(2) matter to にもっとも近い意味と用法の単語を以下から選べ。

A. issue for

B. weigh on

C. problem on

D. material for

3. 下線部(3) come up with にもっとも近い意味の表現を以下から選べ。

A. come alongside

B. think much of

C. catch up with

D. think of

4. 下線部(4)の括弧内の和文に対応する英文を，文頭をThe more training problemsで始め，以下の〔 〕内の語句から完成し，2番目と8番目にあたる語の組み合わせをA～Dから選べ。

The more training problems (1) *(2) (3) (4) (5), (6) (7) *(8) (9) (10) (11).

〔the, the, can, hit, its, rate, gets, chew, better, system, through〕

	(2)	(8)
A	rate	system
B	system	its
C	chew	rate
D	the	gets

5. 下線部(5) chicken-and-egg problem において表現されている内容としてもっともふさしいものを以下から選べ。

A．医師と患者の立場が入れ替わってしまうこと。

B．人間の生み出したAIがいつしか人間を越えてしまうこと。

C．人間でも正解を知らない問題をAIに解かせようとすること。

D．医師の仕事をAIが奪うことにより，医師の社会的地位が危うくなること。

6. 下線部(6) the goal of improving primary care において表現されている内容としてもっともふさわしいものを以下から選べ。

A．地域医療に貢献する医師をより多く育成すること。

B．地域におけるかかりつけ医制度を充実させること。

C．増大する医療費と健康上の問題を抑制・削減すること。

D．患者あたり医師数の地域間格差(都市と地方)を緩和すること。

7. 下線部 (7) a more advanced problem において示されている内容としてもっとも近いものを以下から選べ。

A．重症・重度化した疾病・負傷・障害のこと。

B．AI の社会的応用についての制度整備の問題のこと。

C．AI による解決が期待される難治性の疾病の問題のこと。

D．将来生じるであろう高度に哲学的・倫理的な問題のこと。

8. 下線部 (8) Will Watson eventually make a difference in improving health outcomes and lowering costs? において問われていることについて，文中における答えとしてもっとも近いものを以下から選べ。

A．AI の導入はコストの削減にはつながるが，国民の健康状態の改善には結びつかないだろう。

B．AI によってたしかに国民の健康状態も医療費問題も改善するであろうが，導入にはまだ時間がかかるだろう。

C．AI によってたしかに国民の健康状態は改善するだろうが，導入にはコストがかかり，経費はかえって増大するだろう。

D．AI の導入によって人間の医師の役割は減少し，時間はかかるであろうが，やがて人間の医師の必要数は激減するであろう。

Ⅱ．次の英文を読み，9～16の問題に最も適した答えを選べ。

Ideas grow in lots of ways, and my idea was born of years of research and teaching technical details of the law. But it wasn't enough to have a good idea. I also needed to explain it, and one way to do that was to (9) one of the times when I nearly set my kitchen on fire.

When we lived in New Jersey in the 1970s, I liked to make toast for breakfast. One morning when my daughter was little, probably three or four, she was sitting in a booster chair at the kitchen table, eating cereal. I put a few pieces of bread in our toaster oven, got busy doing six other things, and quickly forgot about the toast. When I saw smoke pouring out of the toaster oven, I grabbed the handle and pulled out the tray, exposing four slices of bread that were on fire. I screamed and threw the tray at the kitchen sink. Three pieces of toast hit the target, but the fourth went high — setting the cute little curtains on fire.

I screamed again, then grabbed my daughter's cereal bowl and threw it at the burning curtains. The milk doused (11) most of the fire, and I calmed down enough to realize that throwing things was probably not my best strategy. Then I noticed that the toaster itself was shooting sparks and appeared to be on fire. I got a glass, filled it with water, and poured the water on what remained of my flaming curtains. Then I grabbed a towel and beat on the toaster (12) until everything seemed quiet and I could unplug it.

Back then, our toaster oven had an on-off switch and that was it. On was "On", which meant that it was possible to leave toast in all day and all night, until the food burned, the wiring melted, and the whole thing burst into flames. At some point — I have no idea exactly when — someone had the bright idea of adding a timer and automatic shutoff. This simple change made it a whole lot harder for distracted mothers, or anyone else, to leave the toaster running until it set the kitchen on fire.

Thirty years later, while working on an article about how the government could protect consumers from predatory (14) financial companies, I thought about those old toaster ovens. By then, it was all but impossible to buy a toaster that had a 20% chance of bursting into flames and burning down your house. But by the 2000s, it was possible to receive a loan for a home that had a 20% chance of putting a family out on the street. In fact, it wasn't just possible; those loans (15) were bursting into flames all over the country.

I figured the fix could be pretty simple: Treat home loans and other financial products like, well, *products*. No one expects a consumer to evaluate the wiring diagram for a toaster. I thought no one should expect a consumer to digest thirty pages of tiny print to evaluate every trick in a financial agreement. Common sense and basic safety — to my mind, that's what this was all about.

[Source: Elizabeth Warren, *A Fighting Chance*, Metropolitan Books, 2014. pp. 127-129]

9. Choose the word that best fits (9) to complete the sentence.

A. form

B. recall

C. replace

D. determine

10. According to the article, what exactly set the curtains on fire? (paragraph 2)

A. one slice of toast

B. three pieces of toast

C. the tray of four slices of bread

D. four slices of bread that were on fire

11. What does the word (11) doused mean?

A. permeated

B. intensified

C. exacerbated

D. extinguished

12. Why did the author use a towel and (12) beat on the toaster?

A. To put out the fire.

B. To cover the toaster.

C. To soak up the water.

D. To unplug the toaster.

13. Why was adding a timer and automatic shutoff to toasters a bright idea? (paragraph 4)

A. Because mothers could make toast faster.

B. Because it gave toasters an on-off switch.

C. Because it allowed mothers to be distracted.

D. Because it allowed toasters to work all day and all night.

14. What does the word (14) predatory mean?

A. private

B. popular

C. harmful

D. historical

15. In the article, loans were bursting into flames all over the country (15) because... (paragraph 5)

A. they could cost a family their home.

B. it was not possible to get a loan for a home.

C. it was not possible for loans to include toasters.

D. toasters had a 20% chance of burning down a house.

16. According to the article, why does the author think that financial products should be treated like other products (paragraph 6)?

A. To read tricky financial agreements.

B. To evaluate consumers' common sense.

C. To protect consumers from financial abuse.

D. To treat financial products like home loans.

Ⅲ. 次の英文を読み，17～25 の問題に最も適した答えを選べ。

The history of much experimental science is gaining access to the unseen. The first time I saw a naked human brain removed from its bony skull, I was (17) struck by its shape: three pounds of meat with the texture of pudding, (18) just a thinking machine made of flesh and fat. This is the brain we see with our eyes, so it's not surprising that people assumed for thousands of years that there must be something else, like a soul. It seems paradoxical that such a material organ could give rise to the experience of an emotion, or the taste of a peach, or the words in this sentence. And yet, there is nothing else: This is all we are.

However, there are limits to what the naked eye can see, so drawing the form of the brain from direct observation can yield only minimal knowledge about its function. For centuries, students of the brain have struggled to overcome this frustrating restriction by developing ways of enhancing vision, bringing the brain into sharper focus. A vast array of sophisticated methods and technologies has been invented, from microscopes to scanners. These have (19) unveiled fascinating and previously unknown brain architecture and processes.

Now it is possible to see inside this fleshy machine. Modern imaging techniques show that beneath the surface is a biological design of near infinite intricacy with the (21) multitudes and machinery necessary to explain the wonder of our existence. The soul isn't dead, it doesn't seem to be needed.

In the last few decades, there (22) revolution in brain imaging. While before we were forced to stain dead tissue, we can now monitor the brain at work, using flow of blood as a signal for specific brain area activity. Although brain imaging snapshots are imprecise, they have (23) profoundly changed our view of ourselves. For the first time, we can see the physical consequences of every thought.

For thousands of years, scientists were forced to decipher the mind from the outside only. They timed reflexes and imagined the link between stimuli and

responses, and listened to patients discuss their dreams. This kind of research remains essential, of course, but the question is what to do with all this new technical information. What can we hope to learn from these latest scientific self-portraits? The only answer is that nobody knows. Perhaps we will learn everything. Perhaps the (24) paradoxes of the mind will be solved by fluorescent neurons and mRNA scans. Perhaps in a few decades, (25) 人間の意識も解きやすい問題になるであろう。

【Source: Jonah Lehrer, *Portraits of the Mind*, Abrams Books. 2010. pp. 6-15】

Glossary:

fluorescent neurons and mRNA scans：蛍光色素を用いた神経細胞及びメッセンジャーRNA スキャン

17. 下線部 (17) struck の文中における意味に最も近い語を 1 つ選べ。

A. bored

B. provided

C. surprised

D. comprehended

18. ". . . . (18) just a thinking machine made of flesh and fat" implies

A. the brain is virtually another biological organ.

B. the author found a soul inside the human brain.

C. the author did not think medicine was very interesting.

D. human brains are more technologically advanced than animals.

19. What does (19) unveiled mean?

A. advanced

B. disclosed

C. restricted

D. revitalized

20. Paragraph 2 is about how

A. brain research inspires machine technology.

B. understanding the brain requires less technology.

C. research has become more technologically advanced.

D. technology used in brain research improves daily life.

21. 下線部 (21) multitudes に最も意味が近いものを１つ選べ。

A. large number of elements

B. simple number of elements

C. complete number of elements

D. sufficient number of elements

22. Choose the phrase that best fits (22) to complete the sentence.

A. will be a

B. is being a

C. has been a

D. should be a

23. Why has brain imaging (23) profoundly changed our view of ourselves?

A. Because it shows connections between body and soul.

B. Because it is very expensive and not easy to perform.

C. Because it shows connections between function and thinking.

D. Because it can show the causes and treatment of mental illness.

24. The phrase (24) paradoxes of the mind refers to

A. the brain's ugly exterior and beautiful interior.

B. the brain's simple appearance and complex function.

C. the brain's high capacity for knowledge but low interest in logic.

D. the brain's desire for self-discovery but inability to develop technology.

25. 下線部(25)の括弧内の和文に対応する英文を，文頭を Perhaps in a few decades, で始め，以下の〔 〕内の語句から完成し，4番目と12番目にあたる語の組み合わせをA～Dから選べ。

perhaps in a few decades, (1) (2) (3) *(4) (5) (6) (7) (8) (9) (10) (11) *(12) .

〔hard, an, consciousness, problem, even, seem, puzzle, easy, will, the, of, like〕

	(4)	(12)
A	consciousness	puzzle
B	even	easy
C	hard	like
D	problem	puzzle