平 成 31 年 度 入 試

個別学力試験問題（前期日程）

英　　　語

学　　　部	問　　　題
法文学部，教育学部，人間科学部，総合理工学部，生物資源科学部	1 , 2 , 4 , 5 -A
医学部医学科	1 , 2 , 3 , 4 , 5 -B

注　意

1. 問題紙は指示があるまで開いてはいけません。

2. 問題紙は 12 ページ，解答用紙は法文学部，教育学部，人間科学部，総合理工学部，生物資源科学部受験生は 1 枚，医学部医学科受験生は 2 枚です。指示があってから確認し，解答用紙の所定の欄に受験番号を記入してください。

3. 法文学部，教育学部，人間科学部，総合理工学部，生物資源科学部受験生は 1 , 2 , 4 , 5 -Aの問題を，医学部医学科受験生は 1 , 2 , 3 , 4 , 5 -Bの問題を解答してください。

4. 答えはすべて解答用紙の所定のところに記入してください。

5. 解答用紙は持ち帰ってはいけません。

6. 試験終了後，問題紙は持ち帰ってください。

It's time to move to a new city. You look at houses you might want to buy and finally settle on one that's in the right location and appeals to you. But in Japan, that appeal hardly matters: the average home only lasts for 30 years. "It's a direct contrast to, for example, western Europe, where many of the (1) most desirable buildings are 200 years old," notes Alastair Townsend, a British architect living and working in Japan. "It's not environmentally sustainable but also not financially sustainable. People work very hard to pay off a loan that's ultimately worth zero."

The disposable-home culture has led to a market, where construction is in constant demand without the number of homes increasing much at all. It has also produced a huge number of architects, who are kept busy by buyers wanting a new house that reflects their lifestyle. According to the International Union of Architects, Japan has almost 2.5 architects per 1,000 residents, whereas Britain only has half an architect per 1,000 residents. The US has only 0.33 architects per 1,000 residents and Canada has 0.22. Japan, (2) in other words, has 11 times as many architects per person as Canada.

The origins of this unusual approach to houses are the result of a long history featuring earthquakes and fires. The Second World War made the situation worse. Most structures in, for example, Tokyo were destroyed, so everything had to be rebuilt from the beginning. The new buildings weren't very good, so after a while many had to be knocked down.

But today's buildings are destroyed even though they could last. That, (3) according to researchers, has a cultural explanation: "The government updates the building laws every 10 years due to the earthquake risk. Rather than spending money on expensive updates, people just build new homes."

The irony is that today's homes are well built and could easily last for several more decades. "Japan has a very efficient and sustainable way of

mass-producing wooden homes that are very good and can even endure earthquakes," notes Townsend. "And Japan is a heavily forested country, but it imports the wood, which is in itself unsustainable." Many other houses, though, are rather logically built using weaker materials as they won't have to last long anyway.

The solution, argues Townsend, is for the government to stop promoting the dream of home ownership for everyone. Several years ago, Japan's parliament passed the so-called 200-year-home law, which reduces homeowners' taxes if their homes are built according to strict standards. The law might not be enough to change the disposable-home culture, but other small changes are under way: more condominiums, which can by definition not be demolished based on the desire of a single homeowner, are being built.

Recent research shows that homes built according to environmentally friendly building standards lose value more slowly than regular ones, though they're more expensive to maintain. And construction companies have found a market in promoting longer-lasting homes for the sake of the environment. As Townsend notes: "We know that we can move toward a better world with less construction."

(Elisabeth Braw, "Japan's disposable home culture is an environmental and financial headache" より 一部改変)

[注] the International Union of Architects 国際建築家連合

1. 下線部(1)の具体的内容を，本文にそって日本語で説明しなさい。
2. 下線部(2)を日本語に直しなさい。
3. 下線部(3)の具体的内容を，本文にそって日本語で説明しなさい。
4. 下線部(4)はどういう法律か，本文にそって日本語で説明しなさい。
5. 下線部(5)を日本語に直しなさい。

2 次の英文を読んで問いに答えなさい。（共通問題）

Computer programs have reached a difficult point in their long journey toward artificial intelligence (AI). They surpass people at tasks such as playing poker or recognizing faces in a crowd. Meanwhile, self-driving cars using similar technology run into pedestrians and posts and we wonder whether they can ever be reliable.

Among these rapid developments and continuing problems, one essential
(1)
building block of human intelligence has proven difficult for machines for decades: Understanding cause and effect.

Put simply, today's machine-learning programs can't tell whether a crowing chicken makes the sun rise, or the other way around. Whatever
(2)
volumes of data a machine analyzes, it cannot understand what a human gets intuitively. From the time we are infants, we organize our experiences into causes and effects. The questions "Why did this happen?" and "What if I had acted differently?" are what make us human, and so far are missing from machines.

Suppose, for example, that a drugstore decides to leave its pricing to a machine-learning program that we'll call Charlie. The program reviews the store's records and sees that past variations of the price of toothpaste haven't correlated with changes in sales volume. So Charlie recommends raising the price to generate more revenue. A month later, the sales of toothpaste have dropped — along with dental floss, cookies and other items. Where did Charlie
(3)
go wrong?

Charlie didn't understand that the previous (human) manager varied prices only when the competing stores did. When Charlie one-sidedly raised the price, price-conscious customers took their business elsewhere. The example shows that historical data alone tells us nothing about causes — and that the direction of causation is crucial.

Machine-learning systems have made surprising progress at analyzing data patterns, but that is the low-hanging fruit of AI. To reach the higher fruit, AI needs a ladder, which we call the Ladder of Causation. Its steps represent three levels of reasoning.

The first step is Association, the level for current machines and many
(4)
animals; on that step, Pavlov's dogs learned to associate a bell with food. The next is Intervention: What will happen if I ring a bell, or raise the price of toothpaste? Intervention is different from observation; raising the price one-sidedly is different from seeing what happened in the past. The highest step is Counterfactual, which means the ability to imagine results, reflect on one's actions and assess other scenarios. Imagine giving a self-driving car this ability. After an accident, its CPU would ask itself questions like: What would have happened if I had not honked at the drunken pedestrian?

To reach the higher steps, machines need a model of the causal factors — essentially, a mathematics of cause and effect. A simple element might be: "Liquor affects people's judgment, and that makes them move in unexpected ways." We can describe this using what scientists now call a causal diagram,
(5)
in which arrows represent a series of possible causes: Liquor ≫ Affected Judgment ≫ Unexpected Motion. Such diagrams enable the car to predict that certain pedestrians will react differently to the honking of its horn. They also give us the possibility of "interrogating" the car to explain its process: Why did you honk your horn?

Current machine-learning systems can reach higher steps only in areas where the rules are not violated, such as playing chess. Outside those areas, they are fragile and easily make mistakes. But with causal models, a machine can predict the results of actions that haven't been tried before, reflect on its actions, and apply its learned skills to new situations.

(Judea Pearl and Dana Mackenzie, "AI can't reason why" より 一部改変)

1. 下線部(1)を，本文中の例を用いて，具体的に日本語で説明しなさい。

2. 下線部(2)の具体的内容を，本文にそって日本語で説明しなさい。

3. 下線部(3)について，Charlie の値段の決め方と人間の店主の値段の決め方の
   違いを，本文にそって日本語で説明しなさい。

4. 下線部(4)の具体的内容を，本文にそって日本語で説明しなさい。

5. 下線部(5)の具体的内容を，本文にそって日本語で説明しなさい。

6. "cause and effect" を理解することによって，将来，機械がどのように進化
   すると考えられるか，本文にそって日本語でまとめなさい。

Quality improvement in healthcare is a team effort and most effective when it includes people using services and their carers, families, and advocates. These people bring direct expertise in matters of health from their personal experience of illness as well as skills from lives beyond the healthcare system.

Some aspects of healthcare undeniably need to be improved, but the quality deficit needs to be clearly described from every angle. We can do things better or we can do better things, but both usually mean acting differently. Patients, carers, and their advocates are a vital source of different perspectives in healthcare.

The invitation to patients to get involved needs to be both timely and respectful. In a board meeting discussing quality indicators, for example, it is demeaning to refer to the participating parent as "mommy." <u>Looking at</u> (1) <u>someone through this lens blinds us to the other life experiences they may have had in their professional career.</u> We need to respectfully acknowledge all the attributes, qualities, and skills that people bring to the table, whether gained through their patient experiences or other personal or career experiences.

In healthcare improvement we are asking patients to play a range of roles in an invisible script, from telling their story, to being representative of a broader group, to partners in co-production. It's not always clear which of these roles patients are asked to play. Patients can find themselves stuck between two expected roles or trying to find out what is required. <u>In this</u> (2) <u>situation</u>, doing better means improving the relevance and practical impact of every contribution.

The level of patient involvement will differ according to the requirements of projects and the preferences of individuals. At all levels, quality of input

trumps quantity. Patients and carers already provide solicited and unsolicited insights into their experiences of services. "Feedback fatigue" can set in if the purpose of further feedback requests isn't clear. New information isn't always better information.

(attention / foundation / is / language / of / paying / quality / the / the / to) for successful dialogue and everyday collaboration. Many patients and carers can describe the pain caused by a single word they encountered while being treated. Especially with new words and labels, it is important that we are respectful toward their owners. For instance, only people with experience of dementia can verify which services are indeed dementia-friendly.

In recent years, we have seen a qualitative expansion of the boundaries of the traditional patient-doctor relationship. Patient advocates are becoming more confident when exchanging knowledge with clinicians and researchers about medical conditions, bringing in their knowledge from outside the medical arena. But we still have some way to go before all clinicians welcome every patient contribution, either during consultations or in discussing service improvements. One example of better healthcare might be that we no longer hear patients, carers, or healthcare professionals say, "I was too afraid to ask or say..."

Beyond these personal encounters, patients also have a key role in organizational change to improve healthcare. The delicate balance of sometimes competing drivers such as speed, volume, integration, and specialization all directly affect people who use health services, so their perspectives need to inform this bigger picture too. Models already exist to involve people, their carers, families, and advocates in all aspects of organizational improvement. The common thread across these is timeliness — involvement early is always better.

Any quality improvement effort can produce unintended collateral damage for patients if the "improvement" is one-dimensional. The flaws of

improvement initiatives will be invisible until users miss the refuge of a kitchen with a toaster in a children's ward or the comfort of a biscuit during regular intravenous treatments. Proper collaboration early in the change process can <u>give insight into what these unintended consequences might be and how to avoid them.</u> (5) Collaboration works both ways. With a deeper connection and appreciation of the rationale for decisions and the constraints that we all operate under (organizational, clinical, personal), we can learn together — and that is always better.

For people using services, better healthcare is personal, as we juggle self-managing an illness with the practicalities of daily life. Often, better actually means (a / choosing / least / limited / menu / of / the / worst) of options. (6) To judge what is better from a patient's point of view, we must remember that the starting point is a profoundly disruptive life event. Living through illness gives individuals a unique insight of enormous value to quality improvement efforts. These efforts must recognize the qualitative nature of patient experience and give it equal priority with the experience of healthcare professionals providing clinical services. <u>The two elements fit hand in glove,</u> (7) even if our language and systems don't always reflect it.
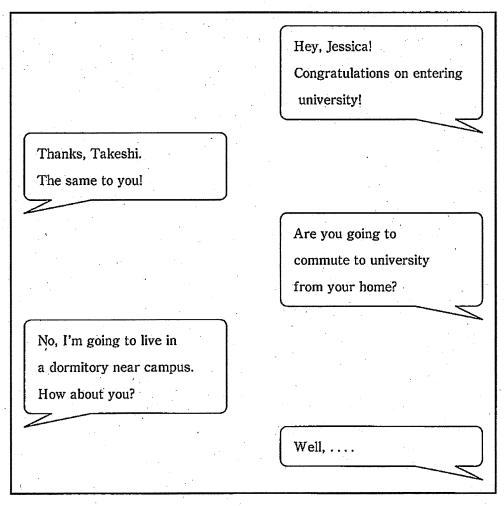
(Anya de Iongh and Sibylle Erdmann, "Better healthcare must mean better for patients and carers" より　一部改変)

[注]　demeaning　品位を落とす　　　dementia　認知症
　　　collateral　付随する
　　　intravenous treatments　点滴による治療
　　　rationale　理論的根拠　　　juggle　巧みにこなす

1.　下線部(1)を日本語に直しなさい。

2.　下線部(2)の具体的内容を，本文にそって日本語で説明しなさい。

3.　下線部(3)の（　　　）内の語を意味が通じるように並び替えなさい。ただし，
　　文頭に来る語は，大文字で始めること。

4.　下線部(4)を，本文中の例を用いて，具体的に日本語で説明しなさい。

5.　下線部(5)を日本語に直しなさい。

6.　下線部(6)の（　　　）内の語を意味が通じるように並び替えなさい。

7.　下線部(7)の具体的内容を，本文にそって日本語で説明しなさい。

4 次の英語の指示に従って，60語程度の英語で答えなさい。なお，解答用紙の指定した（　　　）欄に，使用した語数を記入すること。ただし，コンマやピリオドなどの記号は語数には入れない。（共通問題）

Suppose your name is Takeshi. You live in Japan and you are starting university soon. You are talking with Jessica on-line. She lives in New York City. Tell her where you are going to live while you are a student (apartment, dormitory, parent's home, etc.) and why you decided to live there.

Hey, Jessica!
Congratulations on entering university!

Thanks, Takeshi.
The same to you!

Are you going to commute to university from your home?

No, I'm going to live in a dormitory near campus. How about you?

Well, ...

[注] dormitory 学生寮　　　　commute （～に）通う

5 法文学部，教育学部，人間科学部，総合理工学部，生物資源科学部受験生は
Aの問題に，医学部医学科受験生はBの問題に答えなさい。

A．次の日本文の下線部(1)，(2)を英語に直しなさい。

　　人生には正解というのはありません。一人ひとりが自分の価値観にそって，
(1)
生き方を自由に決めていいのです。

　　人によっては，「こうしなさい」と強く言ってもらいたいと感じることもある
でしょうが，そういう事柄こそ，あなたが自分で考えて決めた方がいいと思い
(2)
ます。

　　(本田健『これから，どう生きるのか―人生にたいせつな９つのこと』より
　　一部改変)

B．次の日本文の下線部(1)，(2)を英語に直しなさい。

難関大学の入学試験や，医師の国家試験に合格するために，多くの人が何年もの間，地道な努力を続けています。これはほかの動物には見られない，人間だけの特性ですよね。

例えば，ライオンは２年間同じシマウマを追っかけまわしたりしません。猛禽類といわれるタカやワシも，一晩中同じネズミを付け狙ったりはしないのです。

(1)そもそも勉強や研究などという，目に見える直接的な報酬がない行為を地道にやり続けられるのは，人間だけなのです。

このような努力を続けている人に「なんでそんなことをするの？」と尋ねると，時々思いがけない答えが返ってくることがあります。「楽しいから」「毎日やっているから苦にならない」などです。

そう答えるタイプの人は，決して「いい格好」をしようとしてそう答えているのではなく，実際にそのように感じているのです。ここにもドーパミンが関与しています。

(2)「頑張っている自分へのご褒美」であるドーパミンがうまく働いている限り，私たちの脳は頑張って何かを達成することに快楽を感じ，結果として，程度の差はありますが，努力を続けることができるのです。

（中野信子『脳内麻薬―人間を支配する快楽物質ドーパミンの正体』より）

[注] ドーパミン dopamine