

## 英 語

## 注 意

1. 問題は全部で18ページである。
2. 解答用紙に氏名・受験番号を忘れずに記入すること。(ただし、マーク・シートにはあらかじめ受験番号がプリントされている。)
3. 解答はすべて解答用紙に記入すること。
4. 問題冊子の余白等は適宜利用してよいが、どのページも切り離してはいけない。
5. 解答用紙は必ず提出すること。この問題冊子は提出する必要はない。

## マーク・シート記入上の注意

1. 解答用紙(その1)はマーク・シートになっている。HBの黒鉛筆またはシャープペンシルを用いて記入すること。
2. 解答用紙にあらかじめプリントされた受験番号を確認すること。
3. 解答する記号・番号の○を塗りつぶしなさい。○で囲んだり×をつけたりしてはいけない。

解答記入例(解答が1のとき)

1	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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4. 一度記入したマークを消す場合は、消しゴムでよく消すこと。×をつけても消したことになる。
5. 解答用紙をよごしたり、折り曲げたりしないこと。

**問題 I** 次の英文を読み、その内容と合うように1～10の文の下線部に入る最も適切なものをそれぞれ①～④の中から一つ選び、解答欄のその数字をマークしなさい。解答用紙(その1)を使用。

When you compare the typical 21st century classroom with that of the early 1900s, the differences aren't terribly obvious. Teachers will be standing in front, giving instructions and sharing notes on a modern-day version of the old blackboard — say, an overhead projector or a shared computer display. Students will be sitting at their desks in the classroom or watching via online video-conferencing software. The technology has changed: a lot of the tools and processes have been digitalized, some of it has been automated, and geographical barriers have been removed to some extent — but the actors and elements have remained much the same.

But thanks to advances in artificial intelligence (AI) and machine learning, a slow but steady transformation is coming to education. In a few years, teachers will no longer be alone in shouldering the burden of training the young generation or the workforce at corporations.

Already, AI algorithms are helping enhance education by collecting, analyzing, and correlating every interaction that takes place in physical and virtual classrooms, and helping teachers to address the specific weak points of each student. This might be the beginning of a revolution in one of the oldest and most valuable social skills that mankind has developed, and an imperative in a world where humans live and work alongside smart machines.

Instructors have to take into account every reaction to a lecture, every blank or attentive stare, every eager or hesitant response to a question, every assignment that is turned in early or late, and a lot more when assessing a student's grasp of a concept. This is how they can find out where students are lagging and steer them in the right direction.

It is also why measuring a learner's progress, an endeavor that is deeply

social in nature, is one of the biggest challenges every teacher faces, and a task that is hard to accomplish with classic rule-based software.

“Course lectures, whether on a college campus or in a corporation, are predominantly one-size-fits-all, with the dominant mode being teachers speaking to students,” says Chris Brinton, Head of Research at Zoomi, an AI company that specializes in capturing and analyzing behavioral data in educational settings. “This is born out of necessity: it would be impossible, or at least inefficient from the standpoint of time, for the teacher to pause the lecture for prolonged periods of time and address each student concern individually to bring all to the same page. Instead, a student with many questions would usually be asked to follow up with the instructor outside of class time.”

However, machine learning algorithms, which are based on analyzing and finding patterns and correlations between data points, are proving to be an effective tool in helping teachers quantify a student’s understanding of a lecture.

“By analyzing specific student data, AI has the potential to help surface more quickly areas in which students may need more help, thereby improving student achievement and teacher support,” says Jessie Woolley-Wilson, president and CEO of DreamBox Learning, an intelligent math-learning platform.

Equipping the classroom with AI is the equivalent of providing every student with a digital tutor, Brinton explains. “The algorithms driving AI can be trained to detect when a learner is struggling and what caused them to struggle, or when they are bored and what caused their boredom,” he says.

This is a shift from traditional learning software, which relied only on assessment responses to measure students’ grasp of the topics they study. “This data is often not available during a lecture in which a student may switch from a clear to confused point of view,” Brinton says.

There are now a number of AI-powered platforms that create rich digital profiles of each student by collecting live information from the user's interaction with course material and context. In addition to keeping records of grades and scores, Zoomi, the platform Brinton helped develop, tracks micro-interactions such as viewing specific slides or pages on PDF documents, replaying a specific part of a video, or posting a question or answer on a discussion forum.

The data is then used to build a model that can give real-time insights into a student's understanding and engagement with specific topics. Data models also help in finding common patterns among multiple students and performing predictive analytics, such as forecasting how students will perform in the future.

More advanced use of AI can involve the employment of complicated computer-vision algorithms to analyze facial expressions, such as boredom and distractedness, and link those to the other data gathered on students in order to create a more complete picture of a student's learner model.

The AI learner model can also power intelligent tutoring systems (ITS). Intelligent tutors, which can work in a self-paced learning environment or in conjunction with human teachers, use a student's historical and real-time data to provide them with personalized content tuned to their specific strengths and weaknesses. Providing a personalized learning experience is a goal that teachers have always struggled to achieve.

"AI-powered tutoring systems have shown to be effective at teaching well-defined subject areas, such as maths and physics," says Rose Luckin, a professor of Learner Centred Design at the University of College London Knowledge Lab. "AI can currently relieve weak points by helping with record-keeping and with the selection and recommendation of resources for learners to use."

The evolution of intelligent tutoring systems can eventually lead to a

richer self-paced learning experience. While it won't be a replacement for human teachers, AI-powered online learning platforms can play a crucial role in making high-quality education available in areas where there's a shortage of teachers, and students have to learn by themselves.

"The combination of big data and AI could provide learners with their own personal analytics, which they can use to become the most effective learner they can be," says Luckin.

Self-knowledge and self-regulation (for example, being able to stop yourself from being distracted by what someone else is doing) are two skills that such systems can help develop, according to Luckin.

"AI can be used to support learners to develop these key skills by reflecting back across their personal data using carefully designed interfaces and visualisations," Luckin says. "In this way all learners could be helped to be better at learning, which would be useful across all subject areas."

One of the benefits of AI-powered learning systems is the seamless assistance they can provide. "The same intelligent technologies that help students and their teachers inside the classroom should always be used to do the same outside of the classroom," says Woolley-Wilson. "They can bring the same power of personalized recommendations wherever the student is. Learning opportunities and access should no longer be restricted to a certain time or place as they've typically been in our analog past."

While we've seen impressive efforts in the application of AI in education, the results weaken in comparison to other domains where AI algorithms are causing major disruptions. The reason is that education and learning are fundamentally social experiences that are extremely hard — if not impossible — to automate.

Another social aspect of education is collaboration. Students often learn more from working in groups and with each other as they do from listening to lectures and solving problems at their own pace. "The goals of education

include more social interaction, such as learning to be a good collaborator or to communicate with others,” says Ritter, the product architect from Carnegie Learning. “So a challenge in personalizing instruction is to balance seeing a student as an independent learner who can proceed at his or her own pace with the need to work collaboratively with others.”

But AI might also become a facilitator in collaborative learning. *Intelligence Unleashed*, a joint research paper by UCL and Pearson, which Luckin coauthored, explains that AI can support collaborative learning by comparing student learner models and suggesting groupings in which participants are at a similar cognitive level or have complementary skills and can help each other out. AI can also take part in learner groups as a member and help swing discussions in the right direction by providing content, posing questions and providing alternative viewpoints.

The universality of AI across the learning process will eventually revolutionize education. According to a Stanford University report, in the next fifteen years, it is likely that human teachers will be assisted by AI technologies that will result in better human interaction both in the classroom and in the home.

The classroom might remain more or less as it is today, but thanks to digital assistants, AI algorithms, and more capable teachers, future generations will hopefully have access to higher quality education and will be able to learn at a much faster pace.

1. Thanks to advances in AI and machine learning, \_\_\_\_\_
  - ① teachers will bear less burden of training the young generation
  - ② teachers will decline teaching in proportion to each student's development
  - ③ students will discard old and valuable social skills mankind has developed
  - ④ students will live in a virtual world where interaction is restricted
  
2. What teachers have to take into account in class is to \_\_\_\_\_
  - ① use classic rule-based software to confirm the effectiveness of their teaching
  - ② overlook every blank or attentive stare students give
  - ③ monitor students' attitudes and their learning progress
  - ④ make every effort to invite a hesitant response from students
  
3. According to Brinton, in typical course lectures, it \_\_\_\_\_
  - ① is common for teachers to give a one-way guidance to the students
  - ② is troublesome for students to look at the same page in the textbook
  - ③ would be possible for teachers to spend a lot of time addressing each student
  - ④ would be necessary for students to ask follow-up questions in class
  
4. Installing AI in the classroom can contribute to education in the form of \_\_\_\_\_
  - ① a learning software which restrains students' understanding
  - ② a modern tool which deters students from detecting their achievement
  - ③ a teacher support which examines teachers' qualifications
  - ④ a digital tutor which provides students with individually customized instruction

5. AI-powered platforms are used to \_\_\_\_\_.
- ① evaluate student performance based on a discussion forum
  - ② engage students in developing their own real-time course material
  - ③ forecast students' future learning inclination
  - ④ conceal students' emotions underlying their facial expressions
6. The evolution of intelligent tutoring systems can \_\_\_\_\_.
- ① offer a learning environment to meet the needs of each student
  - ② rule out big data in analyzing well-defined subjects
  - ③ force students to keep record of their academic achievements
  - ④ result in a shortage of human teachers available
7. One advantage AI-powered learning systems can provide is to \_\_\_\_\_.
- ① judge the applicability of self-knowledge and self-regulation
  - ② disclose each student's personal data of all the subjects
  - ③ distribute human teachers to students for the seamless learning
  - ④ give students constant learning opportunities in any place
8. Ritter says that we should consider \_\_\_\_\_.
- ① the potential of working in groups instead of solving problems alone
  - ② a balance between independent and collaborative learning
  - ③ fundamental social experiences which can be automated
  - ④ social interaction among AI algorithms causing major disruptions
9. In the future, it is likely that \_\_\_\_\_.
- ① capable human teachers will disappear from the classroom
  - ② AI learning will promote interpersonal communication
  - ③ the classroom will change totally from that of today
  - ④ the spread of AI will hinder students' learning progress



10. The main theme of this article is how \_\_\_\_\_.

- ① teachers are showing their superiority to AI
- ② students are reevaluating old-time education
- ③ AI is shaping the future of education
- ④ machine learning is replacing human teachers

**問題Ⅱ** 次の英文を読み、11～20の( )に入る最も適切なものをそれぞれ①～④の中から一つ選び、解答欄のその数字をマークしなさい。解答用紙(その1)を使用。

The average American checks his or her smartphone once every six-and-a-half minutes, or roughly 150 times each day. You probably do this without even thinking about it. This can influence how well we focus and the degree to which we can have meaningful social interactions, especially if we are constantly ( 11 ) ourselves with technology. This is a growing issue, especially among younger people. However, some people might be more resistant to this constant disruption. Many older adults may have not developed these “checking” or “fear of missing out” habits and may be more focused on the present.

In our rapidly changing world, we value ( 12 ). However, there is something to be gained by being slow if slow can make you more present, more mindful, and more aware of other people's perspectives. For example, a slow communicator can be a highly effective one, allowing for natural pauses, such that the audience can more easily follow his or her train of thought. When I first started giving presentations to large audiences (and when teaching classes that had more than 300 students), I was a rapid communicator. With my mind racing a mile a minute, I tried to say everything I knew about a topic in order to be thorough, but I noticed that the crowd didn't always follow along (perhaps much like the many run-on sentences I have hopefully edited in this article). Now, I have only one note to myself that I need as a reminder or prompt ( 13 ) beginning a presentation: “PAUSE.” I will incorporate more time for questions, get more audience participation, and gauge the degree to which my message has been understood by the audience (especially when I need to compete with Facebook in the large lecture classes). With pauses and the right tempo, a ( 14 ) message emerges, often sometimes with fewer

words. Being a slow speaker can also make you a good listener, something that might improve with age.

Slowing down can also make you more aware of the simple dangers of walking and falling. Falls can be one major source of hospitalizations and mortality in old age. A recent book by Dr. Steven Casner, *Careful: A User's Guided to Our Injury Prone Minds*, nicely illustrates all the pitfalls we encounter when we stop ( 15 ). Taking one's time walking down steps, avoiding a tripping hazard, or being aware of slippery surfaces can be critical at any age.

A now-classic example comes from the famous Marshmallow Test. In this study, young children were seated in front of a table with a marshmallow on it. The researcher would be leaving the room for a few minutes. The children were told if they did not eat the marshmallow while the researcher left, then they would be given a second marshmallow. However, if the child decided to eat the marshmallow right away, and before the researcher came back, then they would not get a second marshmallow.

As you might imagine, some kids ate it right away, while others waited patiently — despite it being difficult to ( 16 ) the sugary treat in front of them. What is most amazing is that the researchers followed up on these children years later. Those who were willing to wait to receive the second marshmallow ( 17 ) having higher SAT scores, lower levels of substance abuse, lower likelihood of obesity, better responses to stress, better social skills as reported by their parents, and generally better scores in a range of other life measures.

( 18 ). As a more common example today, a slow Internet connection frustrates most of us. However, it also makes for more mindful searches and more focus and slower consumption of what they yield (as well as an appreciation for faster Internet!). We may be more thoughtful about how many emails we send, and what we include in these messages. Our sometimes





**問題Ⅲ** 次の英文を読み、21～25の( )に入る最も適切なものをそれぞれ①～④の中から一つ選び、解答欄のその数字をマークしなさい。解答用紙(その1)を使用。

'Odours act powerfully upon the nervous system,' noted the 17th-century writer Johannes Müller, in *De Febre Amatoria*. 'They prepare it for all pleasurable sensations. They communicate to it that slight disturbance or commotion which appears as if inseparable from emotions of delight. They all may be accounted for by their exercising a special action upon those organs from which originated the most ( 21 ) of which our nature is susceptible.' This holds just as true in the supermarket, department store or shopping mall as it does in the bedroom. In fact, retailers were quick to realise and exploit in their desire to trigger impulse purchases. In 1973, Philip Kotler, Professor of Marketing at Northwestern University, coined the term 'atmospherics' to describe the 'conscious planning of atmospheres to contribute to ( 22 )' and predicted that 'atmospherics is likely to play a growing role in the unending search of firms for differential advantage.' The discovery that modern consumers enjoy multisensory stimulation while shopping has led to advances in technologies capable of pleasing not only their eyes and ears, but also their senses of smell, taste and touch, by means of lighting effects and plasma screens, specially composed music and aromas to encourage browsing or speed up traffic flow. Today even moderately sized supermarkets allocate space to an in-store bakery ( 23 ) that it is far more convenient and cost-effective for a central bakery to serve a number of stores. Managers know that, by stimulating hunger pangs, the smell of freshly baked bread encourages people to buy not just bread but also other food, even frozen products.

According to Simon Harrop, chief executive of BRAND sense agency, a British specialist in multisensory marketing, the ability of aromas to create an atmosphere that encourages impulse buying is just as effective when those



**問題IV** 次の(1)~(3)の文をそれぞれ英語に訳しなさい。解答用紙(その2)を使用。

- (1) 私だったら、人生の困難を乗り越えるために何でもするだろう。
- (2) 19世紀の画家たちが生涯を捧げた絵画の美しさに私は大いに興奮した。
- (3) 英語によるコミュニケーションの成功は、話し手の観点から考えられがちだ。しかしながら、円滑なコミュニケーションを行うためには、聞き手も積極的に会話に参加することが不可欠である。

**問題V** 次の26~38の文について、下線部に入る最も適切な語句をそれぞれ①~④の中から一つ選び、解答欄のその数字をマークしなさい。解答用紙(その1)を使用。

26. Do not use a recycle bin to dispose \_\_\_\_\_ paper records containing personal information.

- ① in                      ② for                      ③ to                      ④ of

27. I think that it's the best hotel in Tokyo. Their service leaves nothing to be \_\_\_\_\_.

- ① desired              ② aspired              ③ admired              ④ inclined

28. We're doing some work in the ABC studio at the moment, so we won't be back until \_\_\_\_\_.

- ① the week after next                      ② the next week after  
③ next after the week                      ④ after week the next





35. \_\_\_\_\_ in 1887, this academic institution is regarded as one of the most historic buildings in the country.

- ① To find
- ② Founded
- ③ Founding
- ④ Being finding

36. Customer: \_\_\_\_\_?

Clerk: Since you want us to remove stains, we need three extra days.

Customer: Including Sunday?

Clerk: Yes. It'll be ready next Monday.

- ① What time should I expect
- ② How long are you going to be open
- ③ When will you come back
- ④ How soon can I pick this up

37. Lisa: I want to be a flight attendant, but my parents are opposed to my idea.

Dan: Well, that happens. Parents are always worried about their daughters.

Lisa: Actually, I'm not sure I can succeed.

Dan: I think you should be more confident and positive, Lisa. I would say, "\_\_\_\_\_."

- ① Take your time. Just leave everything to your parents
- ② Do what you want first. Success will follow
- ③ Don't rely on yourself. What you believe is not always right
- ④ Guess what you can do. Don't look on the bright side

38. Jane: Mary, how is your new life going in university?

Mary: I'm doing fine, but I need some time to get used to it.

Jane: Don't worry. I bet \_\_\_\_\_.

Mary: Thank you for encouraging me. I will do my best.

- ① you will keep a straight face
- ② you are good with your hands
- ③ you will find your feet
- ④ you are all ears