2025 - 3

医学部医学科英語入試問題

下記の注意事項をよく読んで解答してください。

◎注意事項

1. 配付された問題冊子および解答用マークシートに，それぞれ受験番号(4桁)ならびに氏名を記入し，解答用マークシートの受験番号欄に自分の番号を正しくマークしてください。
2. マークには必ずHBの鉛筆を使用し，濃く正しくマークしてください。
   記入マーク例：良い例 ●
   悪い例 ∅ ⓘ ∅ ⊙
3. マークを訂正する場合は，消しゴムで完全に消してください。
4. 解答用マークシートの所定の記入欄以外には何も記入しないでください。
5. 解答用マークシートを折り曲げたり，汚したりしないでください。
6. 「止め」の合図があったら，問題冊子の上に解答用マークシートを重ねて置いてください。

(受験番号のマークの仕方)

受験番号			
千	百	十	一
0	0	1	2

受験番号			
千	百	十	一
●	●	⓪	⓪
①	①	●	①
②	②	②	●
③	③	③	③
④	④	④	④
⑤	⑤	⑤	⑤
⑥	⑥	⑥	⑥
⑦	⑦	⑦	⑦
⑧	⑧	⑥	⑧
⑨	⑨	⑨	⑨

受験番号 [　　]　氏　名 [　　]

1 次の英文を読み，設問1．～15. に最も適した答えをa．～d．の中から一つ選べ。

1 Some of the most important episodes in our evolutionary history have played out in the grasslands of Africa. One of the most significant was the transition from quadrupedalism to bipedalism, which took place in East Africa some four million years ago. By getting up on two legs, our ancestor Australopithecus could see further, walk for longer and use its hands more freely. The fossil remains of various species of Australopithecus have been found in a strip stretching from the Sahel to South Africa, and palaeontologists have given affectionate nicknames to the most notable individuals: Lucy (*Australopithecus afarensis*), discovered in Ethiopia in 1974, needs no introduction,(2) and there are also Abel (*A. bah-relghazali*), found in Chad in 1995, and Mrs Ples (*A. africanus*), discovered in South Africa in 1947.

2 Then came the ability to fashion the first stone tools, two and a half million years ago, which coincided with(4) the appearance of *Homo habilis*, the first member of the genus *Homo* to which we also belong. [a] The tools that *Homo habilis* made — consisting initially of simple choppers — enabled them to cut up the grassland animals that they hunted as part of their diet. [b] After this came the domestication of fire, which may have started as early as one and a half million years ago, coinciding roughly with the appearance of an inventive relative, *Homo erectus*. Probably inspired by frequent bush fires, *Homo erectus* mastered this element, taking advantage of the heat, light and protection against predators it provided, and above all enjoying the possibilities it offered for new ways of preparing and eating food. [c] Some scientists believe that this species was the first to cook their food: they base their arguments on the small lumps of clay found in archaeological sites linked to *Homo erectus*, which could only have been produced by a very intense and localised heat, such as a fire burning in a hearth. [d]

3 Whenever it first developed, the ability to cook had numerous repercussions(7): cooking softened foods, made the nutrients they contained more easily available and reduced the time needed for chewing and digestion. A morphological effect of this was a reduction in the size of teeth, while the fact that less time was spent chewing food freed up more time and energy for doing other things such as making tools, interacting socially, or even migrating across the landscape. The brain of *Homo erectus* was appreciably bigger than that of their ancestor *Homo habilis* (with a volume of 980 cm^3 as opposed to around 600 cm^3), and some individuals had brains approaching the size of human brains today (1100 cm^3). The cooking of food could well be responsible for this growth in skull size: of all our organs, the brain is the one that consumes the greatest proportion of our energy, with almost a fifth going to power brain activity; the increase in resources provided by cooking was able to support the energy requirements of a larger brain. *Homo erectus* made good use of this added brainpower, leaving Africa and its grasslands behind to spread all around the Mediterranean

coast and as far as Asia. They even colonised islands that had hitherto been inaccessible, such as Crete in the Mediterranean or Flores in Indonesia, by floating across on driftwood or perhaps building rafts. But whether they stayed in their African cradle or emigrated to Asia, *Homo erectus* still relied heavily on species often associated with grasslands, especially elephants. From the southern tip of Africa to Spain, the numerous archaeological sites associated with *Homo erectus* reveal the remains of elephants, which were butchered for food, while their bones were fashioned into tools.

4 Our ancestors were members of the *Homo erectus* species who stayed in Africa and did not travel. As time went on, a new species emerged: *Homo sapiens*. The oldest *Homo sapiens* fossils so far discovered were found in the Omo Valley in Ethiopia, and date from 195,000 years ago. However, recent scientific research places the origins of our species considerably earlier, at 340,000 years, almost doubling its age. This recent discovery, made in 2013, came about in a singular fashion: Albert Parry, an Afro-American living in South Carolina, sent a DNA sample to a company called Family Tree DNA for genealogical analysis. When he carried out further testing on the sample, Michael Hammer, a geneticist at the University of Arizona, was surprised to see that the Y-chromosome, carried only by men, was quite different from the Y-chromosomes he was used to seeing. When he calculated the time necessary for evolution to produce the difference he observed between this chromosome and the rest, Hammer came to the realisation that Albert Parry was descended from a lineage of humans whose ancestors had split off from other humans 340,000 years ago. In other words, humanity is older than the fossil records suggest. More detailed investigation revealed that Albert Perry's close forebears probably came from Cameroon, and more specifically from western Cameroon, close to a place where other interesting facts about our biological past have come to light, thanks — once again — to genetics.
(14)

(出典：How the Zebra Got Its Stripes by Léo Grasset, Pegasus Books, 2017)

1. Which of the following is NOT mentioned as an advantage of getting up on two legs?
   a. easier use of hands
   b. greater viewing range
   c. expansion of travel range
   d. increased speed of movement

2. The underlined phrase "needs no introduction" in paragraph 1 is closest in meaning to _____.
   a. has been available for use
   b. has completely disappeared
   c. is yet to be introduced
   d. is known to many people

3. Which fossil remains were discovered the earliest?
   a. Mrs Ples's
   b. Abel's
   c. Lucy's
   d. Sahel's

4. The underlined phrase "coincided with" in paragraph 2 is closest in meaning to _____.
   a. happened at an earlier date than
   b. occurred about the same time as
   c. was coincidental after
   d. was the other side of the coin to

5. What did the small lumps of clay found in archaeological sites imply about *Homo erectus*?
   a. They often had to fight wildfires.
   b. They had a very powerful heat source.
   c. They had little to defend against predators.
   d. They were not the first species to cook their food.

6. Where would the following sentence best fit in paragraph 2? Choose [a], [b], [c] or [d].
   But there is considerable debate over the exact date at which *Homo erectus* first mastered fire.

7. The underlined phrase "had numerous repercussions" in paragraph 3 is closest in meaning to _____.

a. had an impact on their mindset
b. resulted in a number of changes
c. was appreciated by many tribes
d. was different from any other ability

8. What did the softening of food by heating it lead to?

a. longer time digesting food
b. more active social interaction
c. more time to enjoy eating
d. use of much simpler tools

9. How much larger was the brain of *Homo erectus* than that of *Homo habilis*?

a. About 300 cm^3.
b. About 400 cm^3.
c. About 500 cm^3.
d. About 600 cm^3.

10. What percentage of our energy is used by the brain?

a. About 5 percent.
b. About 10 percent.
c. About 20 percent.
d. About 25 percent.

11. How was it possible for *Homo erectus* to populate Crete in the Mediterranean?

a. They probably crossed the sea on a raft.
b. Some of them could swim over to the island.
c. They had to leave Africa for more grasslands.
d. The island had been colonised by other species.

12. According to paragraph 4, which of the following is true?

a. Fossils of *Homo erectus* were found in South Carolina in 2013.
b. Fossils of *Homo sapiens* dating back 340,000 years were discovered.
c. The oldest *Homo sapiens* fossils ever discovered date back 195,000 years.
d. Fossils found in the Omo Valley in Ethiopia were used to obtain a DNA sample.

13. Which of the following is true about Michael Hammer?

a. He had a DNA sample analyzed by a company called Family Tree DNA.
b. He was the first scientist to double the estimate of the age of *Homo sapiens*.
c. He discovered a Y-chromosome that was different from other Y-chromosomes.
d. He discovered that his ancestors broke apart from other humans 340,000 years ago.

14. The underlined phrase "come to light" in paragraph 4 is closest in meaning to _____.

a. become more knowledgeable
b. been totally worn out
c. been made light of
d. been revealed

15. According to the passage, which of the following is NOT true?

a. *Homo sapiens* was the first species which travelled out of Africa.
b. *Homo sapiens* is older than the fossil record suggests.
c. *Homo habilis* hunted grassland animals for food.
d. *Homo erectus* used the bones of the elephants they hunted to make tools.

2 次の 1 . ～10. は What use is a sauna? と題する一つづきの文章の一部である。 1 . ～10. の各英文それぞれについて，下線部分に誤りを含んでいるものを記号(a)～(d)の中から一つ選べ。

Saunas do many things, but "sweating out the body's toxins" isn't one of them.

1. Sweat is 99 per cent of water(a), with tiny amounts of(b) salt and other minerals. Its function is to cool the body as the water(c) evaporates from the skin, not to(d) remove waste products.

2. It's the(a) liver and kidneys that deal with(b) any toxins in the body, converting them from something(c) useful, or arranging for them to be excreted(d).

3. Nor has(a) a sauna necessarily help you get(b) rid of a hangover. Fifteen minutes in a sauna(c) can lead to the loss(d) of 1.5 litres of sweat.

4. Unless you don't drink(a) lots of water to compensate(b), sweating heavily(c) will only make you more(d) dehydrated.

5. Dehydration puts your(a) kidneys under stress, which it(b) slows down the(c) elimination of alcohol from(d) your system.

6. What a sauna *can* do well is clean(a) your skin, by opening your pores as your sweat(b). A fifteen-minute session at(c) a temperature of 70°C and 40 per cent humidity raises the body's(d) surface temperature by 10°C and its internal temperature by 3°C.

7. This increases blood flow to the skin(a) and makes the lungs work harder, increasing the intake of oxygen by up(b) to 20 per cent — which is because(c) endurance athletes often use saunas as(d) part of their training.

8. A sauna followed(a) by a cold shower generates feel-good endorphins(b) in the brain, and can be(c) used to treating mild(d) depression.

9. Research at(a) the Thrombosis Institute in London has shown that the sauna-cold water(b) combination and also(c) strengthens the immune system by increasing the number of white blood cells that fight(d) disease.

10. Saunas can also reduce(a) the pain of arthritis and the Finns swear by(b) them as a cure for(c) the common coldness(d).

(出典：QI: The Second Book of General Ignorance by John Mitchinson, Faber and Faber Ltd, 2010, All rights reserved.)

3 次の英文を読み，設問 1 . ～15. に最も適した答えを a . ～ d . の中から一つ選べ。

1 The scientific method begins with a broad base of knowledge, an understanding of the facts and contours of the problem you are trying to tackle. In the case of Sherlock Holmes in *A Study in Scarlet*, it's the mystery behind a murder in an abandoned house on Lauriston Gardens. In your case, it may be a decision whether or not to change careers. Whatever the specific issue, you must define and formulate it in your mind as specifically as possible — and then you must fill it in with past experience and present observation. (As Holmes admonishes Lestrade and Gregson when the two detectives fail to note a similarity between the murder being investigated and an earlier case, "There is nothing new under the sun. It has all been done before.")

2 Only then can you move to the hypothesis-generation point. This is the moment where the detective engages his imagination, generating possible lines of inquiry into the course of events, and not just sticking to the most obvious possibility — in *A Study in Scarlet*, for instance, *Rache* need not be *Rachel* cut short, but could also signify the German for *revenge* — or where you might brainstorm possible scenarios that may arise from pursuing a new job direction. But you don't just start hypothesizing at random: all the potential scenarios and explanations come from that initial base of knowledge and observation.

3 Only then do you test. What does your hypothesis imply? At this point, Holmes will investigate all lines of inquiry, eliminating them one by one until the one that remains, however improbable, must be the truth. And you will run through career change scenarios and try to play out the(5) implications to their logical, full conclusion. That, too, is manageable, as you will later learn.

4 But even then, you're not done. Times change. Circumstances change. That original knowledge base must always be updated. As our environment changes, we must never forget to revise and retest our hypotheses. The revolutionary can, if we're not careful, become the irrelevant. The thoughtful can become unthinking through our failure to keep engaging, challenging, pushing.

5 That, in a nutshell(7), is the scientific method: understand and frame the problem; observe; hypothesize (or imagine); test and deduce; and repeat. To follow Sherlock Holmes is to learn to apply that same approach not just to external clues, but to your every thought — and then turn it around and apply it to every thought of every other person who may be involved, step by painstaking step.

6 When Holmes first lays out the theoretical principles behind his approach, he boils it down to one main idea: "How much an observant man might learn by an accurate and systematic examination of all that came his way." And that "all" includes each and every thought; in Holmes's world, there is no such thing as a thought that is taken at face value. As he notes, "From a drop of water, a logician could infer the possibility of an Atlantic or a Niagara without having seen or heard

of one or the other." In other words, given our existing knowledge base, we can use observation to deduce meaning from an otherwise meaningless fact. For what kind of scientist is that who lacks the ability to imagine and hypothesize the new, the unknown, the as-of-yet untestable?

7 [a] Holmes goes a step further. He applies the same principle to human beings: a Holmesian disciple will, "on meeting a fellow-mortal, learn at a glance to distinguish the history of the man and the trade or profession to which he belongs. [b] Puerile as such an exercise may seem, it sharpens the faculties of observation, and teaches one where to look and what to look for." [c] Each observation, each exercise, each simple inference drawn from a simple fact will strengthen your ability to engage in ever-more-complex machinations. [d] It will lay the groundwork for new habits of thinking that will make such observation second nature.

8 That is precisely what Holmes has taught himself (11) — and can now teach us — to do. For, at its most basic, isn't that the detective's appeal? Not only can he solve the hardest of crimes, but he does so with an approach that seems, well, elementary when you get right down to it. This approach is based in science, in specific steps, in habits of thought that can be learned, cultivated, and applied.

9 That all sounds good in theory. But how do you even begin? It does seem like an awfully big hassle to always think scientifically, to always have to pay attention and break things down and observe and hypothesize and deduce and everything in between. Well, it both is and isn't. On the one hand, most of us have a long way to go (13). As we'll see, our minds aren't meant to think like Holmes by default. But on the other hand, new thought habits can be learned and applied. Our brains are remarkably adept at learning new ways of thinking — and our neural connections are remarkably flexible, even into old age. By following Holmes's thinking, we will learn how to apply his methodology to our everyday lives, to be present and mindful and to treat each choice, each problem, each situation with the care it deserves. At first it will seem unnatural. But with time and practice it will come to be as second nature for us as it is for him.

1. To use the scientific method, you need to _____.
   a. explore the contours of the problem
   b. question what it means to know something
   c. have a broad knowledge of many scientific fields
   d. understand the characteristics of the issue you want to solve

2. If you want to solve a particular problem, you must _____.
   a. compare past observations and present observations
   b. find a difference between your experience and other people's
   c. specifically define and formulate the problem
   d. try to analyze and change the current situation

3. The hypothesis-generation point is the moment where you _____.
   a. realize what the most obvious possibility looks like
   b. begin to think about possible ways to investigate an issue
   c. notice the hidden meaning of a word somebody used
   d. start hypothesizing potential problems at random

4. According to paragraph 2, the initial base of knowledge and observation _____.
   a. is useless when it comes to imagining possible scenarios
   b. often leads to random hypothesizing
   c. results from logical explanations for a scenario
   d. serves as the basis for all kinds of hypotheses

5. The underlined phrase "play out the implications" in paragraph 3 is closest in meaning to ___
   a. avoid complicating the matter
   b. follow the consequences
   c. imply your true intention
   d. think deeply about the world

6. Hypotheses must be revised and retested because _____.
   a. it is necessary to change our environment
   b. our environment may not be the same as before
   c. something irrelevant turns out to be revolutionary
   d. your knowledge may not be completely original

7. The underlined phrase "in a nutshell" in paragraph 5 is closest in meaning to _____.

a. at least

b. by nature

c. in essence

d. on end

8. According to paragraph 6, our existing knowledge helps us to _____.

a. find a clue in something seemingly insignificant

b. infer the possibility of inaccurate information

c. shorten the length of necessary procedures

d. understand that many facts are meaningless

9. Where would the following sentence best fit in paragraph 7? Choose [a], [b], [c] or [d].

This is the scientific method at its most basic.

10. According to Sherlock Holmes, what will help you improve observational skills?

a. Applying the same principle to all human beings.

b. Attempting to find out a person's occupation during a first meeting.

c. Getting used to engaging in ever-more-complex machinations.

d. Sharpening the faculties of teaching others.

11. The underlined phrase "second nature" in paragraph 7 is closest in meaning to _____.

a. something easily recognizable

b. something that will never change

c. something present everywhere

d. something you can do easily

12. According to paragraph 8, what is the appeal of good detectives?

a. They are able to teach others as well as themselves.

b. They behave as if they have a hard time solving each crime.

c. They cultivate and apply their ordinary way of thinking.

d. They solve crimes using seemingly simple methods.

13. The underlined phrase "have a long way to go" in paragraph 9 is closest in meaning to __

a. always fail to find the right answer

b. find it hard to think scientifically

c. need to travel long distances

d. spend too much time observing

14. According to paragraph 9, we can learn to think in new ways because _____.

a. Holmes's methodology is surprisingly simple

b. our minds are designed to think like Holmes

c. the connections in our brains are highly adaptable

d. thinking in a scientific way is a big hassle

15. According to the passage, which of the following is NOT true?

a. Sherlock Holmes believes that no idea should be taken at face value.

b. The way Lestrade and Gregson investigated a case did not satisfy Holmes.

c. Holmes's methodology cannot be applied to our daily lives.

d. You will be able to learn and cultivate Holmes's habits of thought.

4 次の英文を読み，1～10の下線部に入る最も適した語(句)をa.～d.の中から一つ選べ。

All memories, either explicit or implicit, must be stored in the brain. The very short-term memory that you need to keep a phone number in mind as you dial is encoded by reverberating electrical activity that passes back and forth between three brain regions: the thalamus, the frontal cortex, and the cerebellum. This working memory is also what you need to keep the beginning of a long sentence in mind as you read to the end. It is easily disrupted by competing mental activity (like someone speaking to you while you dial or read) and is (1)_____ almost immediately after it is used.

Longer-term memories require more enduring alterations. Patterns of electrical activity associated with particular experiences must (2)_____ changes in the interconnected networks of neurons that make up the brain. Signaling in the brain has a mixed electrical and chemical character. Neurons convey information through rapid, all-or-none electrical signals called spikes. A spike travels down the long, thin, information-sending (3)_____ of a neuron called the axon. When the spike invades specialized active zones in the axon, it triggers the release of chemical neurotransmitter molecules. These diffuse across a tiny saltwater-filled gap and activate receptors on the information-receiving part of the next neuron in the signaling chain, called the dendrite, sometimes producing an electrical response in the next neuron in the network. These locations where neurotransmitters are released by one neuron and then received by another are called synapses.

Let's play God for a moment. If you are the Great Engineer and you want to build memory storage in the brain, there are two main options. First, you could have experience-driven patterns of electrical activity persistently change the strength of chemical transmission across synapses. This could take the form of making synapses stronger (or growing new ones) or making synapses weaker (or (4)_____ existing ones). Together, these changes are called synaptic plasticity. Or, you could have experience alter the electrical signaling properties of whole neurons. For example, you could alter neurons to make them more or less likely to fire spikes, or to fire spikes in different temporal patterns. These experience-driven processes are called intrinsic plasticity. It turns out that both intrinsic and synaptic plasticity are involved in storing long-term memories, although much more attention has been paid to the latter. Because each neuron in the brain receives an (5)_____ of five thousand synapses, the information storage capacity of synaptic plasticity is much greater than that of intrinsic plasticity. Intrinsic and synaptic plasticity interact in complex and useful ways to store memories.

Just as important is what's not changed to store memory. Experience does not modify the sequence of DNA in the cells of the brain, so this process cannot be the substrate of memory. Rather,

memory is yet another example, albeit a specialized one, of how experience changes gene expression to produce lasting changes. It's not unlike the example about how the ambient temperature in the first year of life determines the degree of sweat-gland innervation. Only in this case, the tissue being altered by experience is not the (6)_____ nerves or the skin but the brain, and the changes in gene expression give rise to synaptic and intrinsic plasticity, the stuff of memory.

Much of the biology underlying the recollection of memory for facts and events remains poorly understood, but there are some general features we understand. Recollection of memory typically involves electrical activity in at least some of the neurons and synapses that were active during the original experience. However, the story is more complicated than that, as the neural circuits and brain regions involved in storing memories can sometimes shift over time. As mentioned earlier, people who (7)_____ damage to a brain region called the medial temporal lobe will typically lose their memories for facts and events from a period of months or years (8)_____ their injury, also known as retrograde amnesia. Older memories for facts and events remain intact, however, suggesting that they have been transferred from the medial temporal lobe to other brain regions.

In emotional situations, certain neurotransmitters (like dopamine and norepinephrine) and hormones (like epinephrine and corticosterone) are released. Some are released and act within the brain, while others are released in the body and make their way to the brain. These emotion-associated chemical signals can increase the extent of synaptic and intrinsic plasticity driven by experience, (9)_____ strengthening memory. Importantly, this strengthening doesn't just happen at the initial time the memory is (10)_____. If the act of recalling a memory evokes emotional responses, then this chemical process can further strengthen (and warp) the memory every time it comes to mind.

1. a. discarded　b. dissolved
c. distracted　d. distributed

2. a. bring home to　b. take advantage of
c. make light of　d. give rise to

3. a. cable　b. device
c. fiber　d. layer

4. a. discriminating　b. eliminating
c. illuminating　d. nominating

5. a. instance　b. omission
c. average　d. exception

6. a. anonymous　b. peripheral
c. mandatory　d. reproductive

7. a. abstain　b. contain
c. detain　d. sustain

8. a. prior to　b. for fear of
c. apart from　d. in return for

9. a. thereby　b. otherwise
c. besides　d. nevertheless

10. a. called off　b. handed over
c. laid down　d. taken apart

5 次の英文を読み，設問1．～15. に最も適した答えをa．～d．の中から一つ選べ。

1 Any city dweller is no stranger to the frequent revving of motorbikes and car engines, made all the more intolerable after the months of silence during pandemic lockdowns. Some cities have decided to take action.

2 Paris police set up an anti-noise patrol in 2020 to ticket motorists whose vehicles exceed a certain decibel level, and soon, the city will start piloting the use of noise sensors in two neighborhoods. Called Medusa, each device uses four microphones to detect and measure noise levels, and two cameras to help authorities track down the culprit(3). No decibel threshold or fines will be set during the three-month trial period, according to French newspaper *Liberation*, but it'll test the potentials and limits of automating the war on sound pollution.

3 Cities like Toronto and Philadelphia are also considering deploying similar tools. By now, research has been mounting about the health effects of continuous noise exposure, including links to high blood pressure and heart disease, and to poor mental health. And for years, many cities have been tackling noise through ordinances and urban design, including various bans on leaf blowers, on construction at certain hours and on cars. Some have even hired "night mayors" to, among other things, address complaints about after-hours noise.

4 But enforcement, even with the help of simple camera-and-noise radars, has been a challenge. [a] Since 2018, the Canadian city of Edmonton has been piloting the use of four radars attached to light poles at busy intersections in the downtown area. A 2021 report on the second phase of the project completed in 2020, found that officials had to manually sift through(6) the data to take out noise made by, say, sirens. [b] It was also costly: The pilot cost taxpayers $192,000, while fines generated a little more than half that amount, according to CTV News Edmonton.

5 Those obstacles have made noise pollution an increasingly popular target for smart city innovation, with companies and researchers looking to make environmental monitoring systems do more than just measure decibel levels. [c]

6 In one of the noisiest cities in the U.S., a group of researchers at New York University have been studying New York's sound environment since 2016 in hopes of developing a network of smarter sensors. [d] That is, sensors that use machine learning to help city officials not only better address(8) telephone complaints to the city (NYC311) about noise, but proactively set targeted policies to minimize the activity from which they originate.

7 "As the current tool to understand noise, the telephone complaint line is totally flawed because it's a very reactive way of dealing with noise," says Charlie Mydlarz, a senior audio researcher who is part of the SONYC (Sounds of NYC) project funded by the National Science Foundation. "There has to be a noise problem for someone to pick up the phone to actually log a noise complaint." The

process is not only slow and limited by staffing resources of the city, he adds, but it's also not representative of the city's population, with complaints largely coming from wealthier neighborhoods.

8 A network of nearly 100 sensors has gathered "hundreds of millions of rows" of anonymized data from around the city — including audio snippets and data on decibel levels that will help the team understand noise patterns, how loud the city is in certain areas and how they vary over time, Mydlarz says. More than 2,800 citizen volunteers recently helped identify and label a subset of the audio snippets, which is used to train a machine learning model to automatically distinguish the nature of the various noises. Mydlarz adds that the samples have been randomized and broken up to preserve privacy, and that it's unlikely for the sensors to pick up intelligible conversations from where they were placed — usually high off the ground.

9 Now in its second phase, the team is working with the city's Department of Environmental Protection (DEP) to trial a network of roughly 30 low-cost sensors deployed in residential neighborhoods and mounted to the homes of residents who have complained to the DEP about chronic noise issues. The sensors can stream real-time data on decibel levels in the neighborhood and source identification of noise disturbance to the department, which will help them better distribute and lead to a more immediate response time.

10 They can give the city concrete data to propose changes in regulation to, say, construction permits, if they detect a pattern among the noise violations. Mydlarz says their project has already proved useful in the Red Hook community of Brooklyn, where the waterfront has seen an influx of warehouses thanks to the e-commerce boom. Residents say trucks often pass through residential neighborhoods, clogging up streets (12) and generating excessive amounts of noise.

11 "Our sensors (12) were being used to generate data that then is used to convince the city agencies to reroute trucking away from residential areas," says Mydlarz. The data illustrated just how loud the trucks are, and on October 29 last year, the community board unanimously supported a resolution asking the city department of transportation to consider such changes (13).

12 As for residents, the noise monitoring network comes (13) with an app that also provides context about the noise they're hearing — if there is a permit for a construction project nearby, for example. The researchers are currently looking for more volunteers so they can deploy more sensors. (Mydlarz says they would ideally like to mount sensors on light poles and other city infrastructure, but are limited by which city agencies they're able to partner with.)

13 The hope is to generate more support from both city officials and residents. "What we want to do is to show them the loop (14)," he adds, "meaning you deploy a sensor, you see the data, the DEP enforces the noise code, and measure the impact of that enforcement."

(出典：Automating the War on Noise Pollution by Linda Poon, Bloomberg, Dec. 3, 2021)

1. Since the pandemic lockdown was lifted, _____.
   a. some cities have become even quieter
   b. sounds from motorcycles and cars have changed
   c. the roar of motorbikes and cars has become unbearable
   d. the number of city dwellers with motorcycles has been on the decline

2. The new noise sensors installed in Paris neighborhoods _____.
   a. each have two cameras and four microphones
   b. have been used by Paris police since 2020
   c. were developed by a company called Medusa
   d. are used to ticket motorists whose vehicles are too loud

3. The underlined phrase "track down the culprit" in paragraph 2 is closest in meaning to _____.
   a. determine the level of noise
   b. find out who is making the noise
   c. photograph the pedestrians
   d. turn down the volume of sounds

4. According to paragraph 3, _____.
   a. a lot of cities have stopped relying on urban design
   b. Medusa has long been used in Toronto and Philadelphia
   c. prolonged exposure to noise has been linked to poor health
   d. new studies of the health effects of noise pollution have begun

5. Where would the following sentence best fit in paragraphs 4-6? Choose [a], [b], [c] or [d].
   And the recordings didn't always provide strong enough evidence against the offender in court.

6. The underlined phrase "sift through" in paragraph 4 is closest in meaning to _____.
   a. examine
   b. moderate
   c. store
   d. transmit

7. In Canada, pilot deployment of radars _____.
   a. cost a little less than originally budgeted
   b. resulted in large numbers of complaints
   c. was useless for noise made by sirens
   d. proved to be uneconomical

8. The underlined phrase "better address" in paragraph 6 is closest in meaning to _____.
   a. locate the origin of
   b. put strict limits on
   c. respond more effectively to
   d. unanimously uphold

9. According to Charlie Mydlarz, which of the following is true?
   a. More people than expected called to report a noise complaint.
   b. Placing monitoring sensors is an appropriate way to deal with noise.
   c. The responses they receive are representative of the city's population.
   d. Not everyone who is bothered by noise calls the complaint line.

10. According to paragraphs 7 and 8, researchers in New York have tried to _____.
   a. randomize the noise sources
   b. listen to all the audio snippets
   c. train over 2,800 citizen volunteers
   d. protect the privacy of those who are recorded

11. According to paragraph 9, which of the following is true?
   a. Noise is a bigger concern to the DEP than it is to residents.
   b. Real-time noise data streaming is unavailable from the sensors.
   c. Some New York residents are cooperating with the DEP.
   d. The team asked the DEP for an effective sensor network.

12. The underlined phrase "clogging up streets" in paragraph 10 is closest in meaning to ___
   a. causing traffic jams
   b. littering the roads
   c. making a detour
   d. wandering the streets

13. In paragraph 11, the underlined phrase "such changes" refers to _____.
   a. diverting trucks away from residential areas
   b. generating more data by the use of the sensors
   c. trucks becoming less noisy than they used to be
   d. convincing the city officials of the solution

14. In paragraph 13, what Mydlarz means by "the loop" is that _____.
   a. city officials will provide more support for the residents
   b. the sooner residents can see the data, the more they use a sensor
   c. there will be more support from the residents to the city officials
   d. residents will see the benefits of having a sensor in their home

15. According to the passage, which of the following is NOT true?
   a. More and more warehouses were built in an area of Brooklyn.
   b. Most noise sensors were placed close to the ground.
   c. New York City is one of the noisiest cities in the United States.
   d. Wealthy families accounted for most of the telephone complaints.

6 次の日本文の下線部１～５を英訳した場合，それぞれ最も適切な英文をａ．～ｅ．より一つ選べ。

「最も強い者が生き残るのではない。最も賢い者が残るのでもない。唯一生き残るのは変化できる者である」(チャールズ・ダーウィン『種の起源』より)。

改革や自助努力，闘いの勝利を期待する企業経営者や政治家，それに政権与党の広報などが大好きな[1]言葉である。「ダーウィンの呪い」の象徴的存在と言える。だがこの言葉を使っている人の思惑とは裏[2]腹に，実はこの言葉はダーウィンの言葉ではない。『種の起源』にも出てこない。それどころか『種の[3]起源』には，第７章のサマリーの末尾にこう記されている。

「そうした本能は，すべての生物を発達させる一つの普遍法則，つまり増殖，変化，そして“最も強い者”を生かし，“最も弱い者”を死なせることの，小さな結果だと考えるほうがずっと納得できる」

ダーウィンの真意は別として，進化の普遍法則とは，最も強い者を生き残らせ，最も弱い者を死なせ[4]ることだと，ダーウィンは書いているのである。なぜこんなダーウィンが書いた言葉と正反対の意味の[5]言葉が，ダーウィンの言葉として広がっているのだろう。

(出典：千葉聡『ダーウィンの呪い』講談社、2023年)

1 a. This is a favorite quotation of business executives, politicians, and even the public relations departments of the ruling party, who expect reform, self-help, and victory in the struggle.
b. The governing party's public relations team hopes to win the struggle by employing this sentence because business owners and politicians are fond of self-help and reform.
c. Business owners and politicians expect reforms and self-help, the same words that the ruling party's PR people love to use when they expect the struggle to be won.
d. These words are expected not only by business executives and politicians who love reform, self-help, and winning the fight, but also by the public relations of the governing party.
e. This is the standard line of argument from politicians and business leaders who support self-help and change, as well as from the ruling party's public relations department, which rejoices in the struggle's triumph.

2 a. Contrary to the speculation of those who use the quote, however, it is not actually Darwin's words.
b. But those who use the term actually know that this is not in fact Darwin's statement.
c. Nevertheless, contrary to Darwin's speculation, these words are not actually used by many people.
d. Unlike what those who use the phrase might believe, the term's non-Darwinian nature has distinct implications.
e. However, Darwin uses the sentence with a different thought, although those who use it are unaware of it.

3 a. On the contrary, Chapter 7 of the summary of *The Origin of Species* ends with these words.
b. By contrast, at the end of Chapter 7 of *The Origin of Species*, Darwin wrote the following summary.
c. Darwin wrote the same thing at the end of *The Origin of Species* as a summary of Chapter 7, as follows.
d. Although it seems exactly the opposite, at the end of Chapter 7 of *The Origin of Species*, he writes a brief summary.
e. As a matter of fact, at the end of the summary of Chapter 7 of *The Origin of Species*, he writes as follows.

4 a. Darwin's true point is that it is precisely because the strongest survive and the weakest are eliminated that there are universal laws of evolution.
b. Darwin's underlying message, if you ignore the minute distinctions, is that the fittest survive and the weakest perish according to the universal law of evolution.
c. What Darwin truly wanted to convey was that the law of evolution and universal truth is that the strongest can survive without letting the weakest die.
d. Putting aside for the moment Darwin's true intent, he wrote that the universal law of evolution is that the strongest should survive and the weakest should die.
e. Darwin's true meaning is not always clear, but he wrote that it is only by the universal laws of evolution that the strongest survive and the weakest die.

5 a. Why had Darwin written something that meant the exact opposite of what was being spread as his words?
b. You may be wondering why something that is spread as Darwin's language has become so different from his original wording.
c. How is it that words that mean the exact opposite of what Darwin wrote are spreading as Darwin's words?
d. The fact that terms that have the exact opposite meaning of the ones Darwin wrote are being widely used would have surprised him.
e. Isn't it curious that the words have come to be understood in the exact opposite sense, even though Darwin used it to mean exactly that?