前期日程

令和5年度入学試験問題

英　　語

注　意　事　項

1．　この問題冊子は、試験開始の合図があるまで開いてはいけません。

2．　解答用紙は問題冊子とは別になっています。解答は解答用紙の指定されたところに記入しなさい。それ以外の場所に記入された解答は、採点の対象となりません。解答用紙は4枚あります。

3．　本学の受験番号をすべての解答用紙の指定されたところへ正しく記入しなさい。氏名を書いてはいけません。

4．　この問題冊子は、表紙を含めて20ページあります。問題は4ページから18ページにあります。ページの落丁・乱丁及び解答用紙の汚れ等に気付いた場合は、監督者に申し出なさい。

5．　問題冊子の余白等は適宜利用しても構いませんが、どのページも切り離してはいけません。

6．　この問題冊子は持ち帰りなさい。

1 次の英文を読んで以下の問に答えなさい。

The crucial difference between language and music is that language is mnemonic: each word has a unique sonic signature that identifies a particular meaning—whereas despite its ability to evoke feelings of sadness or joy, excitement or tranquillity, by itself music does not transmit or encode any specific information along with its emotional affect. Yet this only seems to heighten its force. All art may be about communication, but music—without words or images—seems able to touch us the most. As Victor Hugo sagely put it, "*Music expresses that which cannot be said, but about which it is impossible to remain silent.*"

What are we responding to when we listen to music? What is the itch that music lets us scratch? To understand that, we'll have to look at what we know about how music works. Even without musical training, most of us can hear the notes in a scale and tell if an instrument is out of tune, even if we don't know why—or how to correct it. In the same way, most people can sing, hum or whistle a familiar tune in a form recognisable to others. But how are we able to do that? How can we tell notes apart so easily? As the Ancient Greeks discovered, it's all about (A). All sounds are just vibration at a certain frequency, which our ears hear as pitch. Men's voices are lower than those of women and children because their vocal cords are longer (they lengthen during puberty) and vibrate at a lower frequency, which gives men a deeper-sounding voice. In fact, on average women and children speak about an octave higher than men. But the high note in an octave turns out to be exactly double the frequency of the lower note—and this simple relationship is what makes the octave interval seem so obvious to us.

In the same way, the familiar notes of the sol-fa scale (DO-RE-MI-FA-SO-LA-TI-DO) also come down to simple ratios. If an octave is a ratio of 2:1, a fifth (the SO in the sol-fa scale) is a ratio of 3:2. A third (MI) is 5:4 and the sixth (LA) is 5:3. Together with the second (RE), a ratio of 9:8, these five notes form the so-called pentatonic scale used in folk music around the world from the earliest times (bone flutes dating back 40,000 years are tuned to a pentatonic scale). This is one of the easiest scales to hear, sing and play with simple instruments, as it has no semi-tones or dissonance. But as our tastes became more refined, other notes were gradually added, resulting in the now 'standard' chromatic scale of twelve

notes with equal spacings between them. These are the black and white keys on the piano, on which musicians weave their fascinating maths: the jazz pianist Thelonious Monk once said that all musicians are (B), whether or not they know it.

Why should these sounds touch us? How can the ratios of frequency that make up a melody move us to tears? Perhaps it's because what our brains do best is to find patterns, and we are simply exploiting a sensitivity to such distinctions that developed through language, enjoying what Steven Pinker called 'auditory cheesecake'. (1)In much the same way we can understand language spoken by a woman, man or child, or in a different accent or speed, we can recognise a tune we know even when it's played in a different key, by a different instrument, or in a different time signature. That's because a tune, like a sentence, has a signature: with music it's the relationship between sound and rhythm; with speech it's the relationship between sound and meaning. In both cases we're not just remembering a specific instance of a particular tune or sentence, we're remembering what's common between them: the pattern of frequencies that marks them out as unique. And when the patterns of tension and release between notes correspond to the emotional tension we feel within ourselves—everything from gratitude to grief—(2)we sense the music as a feeling: a feeling that words may help to define, but can only ever be felt as melody, harmony and rhythm.

(*Source*: Simon Prentis, *SPEECH!—How Language Made Us Human*)

問1　論旨を踏まえて、空欄(　A　)に入れるのにもっとも適切な語を次の①～④から選び、その番号を書きなさい。

① audio　② curves　③ formulas　④ ratios

問2　空欄(　B　)に入れるのにもっとも適切な名詞を考え、その英単語1語を記しなさい。

問3　下線部(1)について、私たちが言語及び音楽を理解、認識する際に共通して行うことはなにか。筆者の考えを20字以内の日本語で述べなさい。

問4　下線部(2)は、第一段落のVictor Hugoの言葉と呼応している。それら両者の主旨を踏まえると、音楽はどのようなことを何によって表現する、ということができるか。40字以内の日本語で要約しなさい。

2 次の英文を読んで以下の問に答えなさい。

Animals understand a lot more than we might think, but they don't understand as much as we often wish they did. Many humans believe animals understand us so completely that we interact with them using all our communication resources, including language. And animals respond to our interaction in ways that make sense to us. They cock their heads, look at us, purr, and snuggle with us.

Although many of us talk frequently with the animals in our lives, we also have an intuitive (a) of what they can and can't actually understand.

The words that make up languages consist largely of symbolic, arbitrary connections between something used to represent and something being represented. There is nothing, for instance, about the string of sounds in the word 'cat' that would allow someone who didn't know English already to deduce what the word stood for.

Many different species, including dogs, parrots, dolphins, and several species of primates, are able to make symbolic connections. Consider the commands we often teach our pets and how they respond. For example, dogs learn relatively quickly how to 'play dead.' They understand that the arbitrary string of sounds stands in for a particular action. Some dogs and some primates have learned over 1,000 different words/phrases and are able to figure out the meaning of a new word through mechanisms of (b) that resemble what young humans do as they start to learn the words of their language.

The same species that have learned to interpret these kinds of meaning relationships have also demonstrated that they can understand that ア [changes / different / in / orders / putting / meaning / words]. A border collie named Chaser, for instance, understands the difference between 'to X, take Y' and 'to Y, take X.'

These examples can start to make it seem like animals understand quite a bit of language, but we need to be cautious about (1)<u>this assumption</u>. Importantly, animals' ability to interpret words and word order is rudimentary and limited to relatively few words. It also requires a lot of dedicated (c) by humans to emerge. While humans understand novel and complex uses of language almost immediately, even the most well-trained animals don't seem able to

do so. This (d) makes it nearly impossible for animals to fully understand our linguistic communications.

Three broad observations illustrate what animals can't understand. First, [Ⅰ]. In the 'play dead' example, dogs don't understand that 'play' can be combined with a different word like 'ball' to capture a new meaning.

Second, [Ⅱ]. For example, they can't understand the differences or similarities between utterances like 'You hear me' and 'Do you hear me?'. For humans, this seems really simple but it is in fact pretty tricky to understand because of the pronouns and the underlying relationship between statements and questions.

Third, [Ⅲ]. Even animals who understand many words can't be told, 'Repeat what you did yesterday!' Understanding that depends minimally on understanding the differences signaled by past and present.

Understanding what non-humans can and can't understand about language helps humans know how to communicate with other species. This understanding gives us (e) into what aspects of language are unique among the world's communication systems. And perhaps most importantly, using language with the animals who share our lives helps humans feel closer to those animals and reminds us every day how amazing it is that we can bond to another species so intensely.

(*Source*: Caroline Myrick and Walt Wolfram, *The 5-Minute Linguists*)

問１　論旨を踏まえて、空欄(　a　)～(　e　)に入れるのにもっとも適切な名詞を次の①～⑤から選び、その番号を書きなさい。ただし、同じものを繰り返して用いないこと。

① deduction　② insight　③ limitation　④ sense　⑤ training

問２　文中ア[　　]の中の語を文意に沿うように並べかえなさい。

問３　下線部(1)が表しているのはどのようなことか。20字以内の日本語で述べなさい。

問４　論旨を踏まえて、空欄[　Ⅰ　][　Ⅱ　][　Ⅲ　]に入れるのにもっとも適切な文を次のＡ～Ｆからひとつずつ選び、その記号を書きなさい。ただし、同じものを繰り返して用いないこと。

Ａ．animals don't seem to understand complex references to time and space

Ｂ．animals understand how to create new expressions from broken component parts

Ｃ．animals don't understand complex relationships between words

Ｄ．animals fully understand complex references to time, but they hardly ever understand references to space

Ｅ．animals don't understand that words or phrases can be broken down into component parts and then that those elements can be recombined to create a new expression

Ｆ．animals understand complex relationships between words

3 ***Read the following text and answer the questions.***

While humans have been shown to be able to feel for robots, the possibility of emotional reciprocity with robots remains an open question for many. When I asked Will, 37, a single man from Florida, if he can imagine having a relationship with a robot, he told me: "One could become too dependent on these robots to only realize after a time that it is indeed just a program that has no emotions and does not care about the person. I could see this leading to further depression."

Creating emotional intelligence is a difficult task. Just ask psychologists who struggle with their human patients on how to be more considerate and tactful in human-to-human situations, and they will tell you how hard these sessions can be, all the more so when it comes to interacting with machines and programming them to behave in such a way.

However, there is a significant scientific effort to make robots master emotional skills. This is done in several ways and through several stages. First, scientists generally break emotional intelligence into several components and then program for each of these components separately. For example, with the help of the cognitive revolution, robots can use deep-learning Artificial Intelligence (AI) to develop skills in speech recognition, thus learning how to identify speech cadences and vocabularies associated with certain emotions and react accordingly. [1]

Second, some robots are designed to be adaptive and learn from their users. One novel and promising approach relies on an algorithm that the robots use to rate interactions with their users. For example, a robot programmed to comfort a human user will make an initial attempt to do so with a combination of soothing voice intonations, warm body language, and perhaps a robotic facial expression indicative of support. [2] With each back-and-forth, the robot learns what works with this particular user and stores it in its memory.

This might sound too artificial, but let's take a step back—when interacting with those we are close to, whether they are friends, or colleagues, or partners, we engage in just this way—we act, watch the reactions we receive to our behavior, and learn from it. [3] We do this from infancy in crying to draw attention or in smiling to form a connection. Over time, we

learn how to interpret a set of behaviors, honing these skills throughout our lives. In adulthood, we tailor our reactions to our partners and loved ones. We learn what they need and want from us in times of stress and happiness and do the best we can to provide them with these acts and gestures.

Robots are just in their initial steps in this regard. Even the most sophisticated and expensive robot is still an infant in terms of knowing the impact of its movements and facial expressions. Yet, when I discussed this with Ishiguro, the creator of Erica, Geminoid, and a series of other robots, he challenged me to think of robots' abilities once they have accumulated data and patterns of behavior based on millions of users. [4] We are not there yet, he argued, but we can see where it is going.

On top of those sophisticated learning and adaptation processes, the fact is that robots are always willing to take care of others, assist with cognitive tasks, and memorize what should be done to help compensate for their imperfection as non-humans. Think of a smiling and willing nurse that does not speak your language. The very fact that they are nice adds to their other capabilities to create a good-enough companionship. Indeed, studies show that robots' existing emotional intelligence is already sufficient to make users enjoy and accept robots as their companions in cases of nursing and caring for older people.

(*Source*: Elyakim Kislev, *Relationships 5.0: How AI, VR, and Robots Will Reshape Our Emotional Lives*)

Question 1 Why might some people feel unhappy with robots? Choose the correct answer.

A. Because robots and humans can have relationships.

B. Because robots cannot show facial expressions.

C. Because robots do not feel the same way as humans.

D. Because robots use humans to learn.

Question 2 What do psychologists struggle with? Choose the correct answer.

A. Dealing with emotional intelligence

B. Interacting with machines and programming

C. Making robots take care of others

D. All of the above

Question 3 What does the text say about robots today? Choose the correct answer.

A. They are in an early stage of development in some respects.

B. They can program separate components of emotional intelligence.

C. They have mastered emotional skills.

D. They learn from each other.

Question 4 Look at the sentence below, which has been removed from the text. In what position [1] – [4] should it appear? Write the correct number in the box.

The robot then determines the human user's reaction to its attempts and adjusts itself accordingly to achieve the desired human emotion.

Question 5 Would you like to have a robot as a companion? Give two specific reasons to support your opinion. Write your answer in English in the space provided.

4 次の英文を読んで以下の問に答えなさい。

We would not be such competent thinkers if we had to rely only on the limited knowledge stored in our heads and our facility for causal reasoning. The secret to our success is that we live in a world in which knowledge is all around us. It is in the things we make, in our bodies and workspaces, and in other people. We live in a community of (A).

We have access to (a) amounts of knowledge that sit in other people's heads: We have our friends and family who each have their little domains of expertise. We have experts that we can contact to, say, fix our dishwasher when it breaks down for the umpteenth time. We have professors and talking heads on television to inform us about events and how things work. We have books, and we have the richest source of information of all time at our fingertips, the Internet.

On top of that, (1)we have things themselves. Sometimes we can fix an appliance or a bicycle by looking at it to see how it works. On occasion, what's broken is obvious when we take a look (if only this were more common!). You might not know how a guitar works, but a couple of minutes playing with one, seeing what happens when the strings resonate and how their pitch changes when their lengths are changed, might be enough to give you at least a basic understanding of its operation. In that sense, knowledge of a guitar can be found in the guitar itself. There is no (b) way to discover a city than to travel around it. The city itself holds the knowledge about how it is laid out, where the interesting places to go are, and what you can see from various vantage points.

We have access to more knowledge today than ever before. Not only can we learn how things are made or how the universe came to be by watching TV, we can answer almost any factual question by typing a few characters on a keyboard and enlisting a search engine. We can frequently find the information we need in Wikipedia or somewhere else on the web. But the ability to access knowledge outside our own heads is not (c) only of life in the modern world.

There has always been what cognitive scientists like to call a division of cognitive labor. From the beginning of civilization, people have developed (d) expertise within their

group, clan, or society. They have become the local expert on agriculture, medicine, manufacturing, navigating, music, storytelling, cooking, hunting, fighting, or one of many other specialties. One individual may have some expertise in more than one skill, perhaps several, but never all, and never in every aspect of any one thing. No chef can cook all dishes. Though some are mighty impressive, no musician can play every instrument or every type of music. No one has ever been able to do everything.

So we (I). That's a major benefit of living in social groups, to make it easy to share knowledge. It's not surprising that we fail to identify what's in our heads versus what's in others', because we're generally—perhaps always—doing things that involve both. Whenever either of us washes the dishes, we thank heaven that someone knows how to make dish soap and someone else knows how to provide warm water from the faucet. We wouldn't have a clue.

Sharing knowledge is more sophisticated than it sounds. Human beings don't merely make (e) contributions to a project, like machines operating in an assembly line. Rather, we are able to work together, aware of others and what they are trying to accomplish. We pay attention together and we share goals.

Our skulls may delimit the frontier of our brains, but they do not delimit the frontier of our (B). The mind stretches beyond the brain to include the body, the environment, and people other than oneself.

(*Source*: Steven Sloman & Philip Fernbach, *The Knowledge Illusion—Why We Never Think Alone*)

問1　空欄(　A　)と空欄(　B　)には同じ1語が入る。その単語を本文中より抜き出しなさい。

問2　論旨を踏まえて、空欄(　a　)～(　e　)に入れるのにもっとも適切な形容詞を次の①～⑤から選び、その番号を書きなさい。ただし、同じものを繰り返して用いないこと。

① better　② distinctive　③ huge　④ individual　⑤ true

問3　下線部(1)が表しているのはどのようなことか。20字以内の日本語で述べなさい。

問4　論旨を踏まえて、空欄(　I　)に入れるのにもっとも適切な1語を次の①～⑤から選び、その番号を書きなさい。

① amend　② collaborate　③ facilitate　④ practice　⑤ protest