

2019 (平成31) 年度

ふじた未来入学試験 (AO入試) 学習能力適性検査

英 語

注意：第1問から第3問まではマークシートに解答しなさい。
第4問と第5問は記述用解答用紙に解答しなさい。

マークシートの記入について(注意事項)

1. 解答の作成には、H、F、HBの鉛筆を使用して正しくマークすること。
よい解答例 ● (正しくマークされている)
悪い解答例 ○ ⊖ (マークが部分的で解答とみなされない)
2. 解答を修正する場合は、必ず「プラスチック製消しゴム」であとが残らないように完全に消すこと。
鉛筆の色が残っていたり、「」のような消し方などをした場合は、修正したことにならないので注意すること。
3. 解答用紙は、折り曲げたりメモやチェック等で汚したりしないよう特に注意すること。
4. 受験番号欄の記入方法《 受験番号記入例(右図)参照 》
 - ① 受験番号を数字で記入する
 - ② 受験番号の数字を正しくマークする
 正しくマークされていない場合、採点できないことがあります。

— 受験番号記入例 —
受験番号1001の場合

受 験 番 号 欄			
千位	百位	十位	一位
1	0	0	1
○	●	●	○
●	○	○	●
○	○	○	○
○	○	○	○
○	○	○	○
○	○	○	○

注：選択する数字は『0』から順番に並んでいます。

藤田医科大学医学部

第1問から第3問では、問題文の中の[]内の数字はマークシートの間番号を示している。該当する問番号の解答記入欄に答をマークしなさい。

第1問 次の問1～6の空所[1]～[6]に入れるのに最も適当なものを(1)～(4)から1つ選び、その番号をマークしなさい。

問1. I have no idea if he [1] the next meeting.

- (1) attends (2) has attended
(3) has been attending (4) will attend

問2. He was made [2] gather honey and got stung so many times.

- (1) help (2) helped (3) helping (4) to help

問3. She was [3] for her son's future business career.

- (1) anxious (2) envious (3) sure (4) susceptible

問4. Language [4] us to hold and manipulate knowledge and concepts beyond our direct experiences.

- (1) disables (2) enables (3) lets (4) makes

問5. Mary visited several tourist sites [5] staying in Tokyo.

- (1) during (2) for (3) while (4) with

問6. Within a few years, she [6] in to pressure from friends to open her garden for public tours.

- (1) gave (2) got (3) forced (4) put

第2問 次の問1～4においては、それぞれ日本語の意味に合うように下の(1)～(7)の語を並べかえて空所を補い、適当な文を完成させなさい。解答は[7]～[14]に入れるものの番号のみをマークしなさい。ただし文頭にくる文字も小文字にしてある。

問1. 恐れ入りますが、幾つか質問にお答えいただけませんかでしょうか。

_____ [7] _____ [8] _____ answer a few questions of mine?

- (1) as (2) be (3) kind (4) so
(5) to (6) would (7) you

問2. 話す機会が与えられて当然と考えるべきではない。

We should not take _____ [9] _____ [10] _____ opportunities to speak.

- (1) afforded (2) are (3) for (4) granted
(5) it (6) that (7) we

問3. 窓を開けて初めて雨が止んでいると気付いた。

Only _____ [11] _____ [12] _____ it had stopped raining.

- (1) did (2) I (3) notice (4) opening
(5) the (6) when (7) window

問4. 私が最終的に書いたことは本来書くつもりだったこととほとんど関係が無い。

What I finally _____ [13] _____ [14] _____ I originally planned to write.

- (1) do (2) has (3) little (4) to
(5) what (6) with (7) wrote

第3問 次の英文を読み、後の問いに答えなさい。

Students who lived in dormitories without air conditioning (AC) during a heat wave performed worse on a series of cognitive tests compared with students who lived in air-conditioned dorms, according to new research led by Harvard T.H. Chan School of Public Health. ^{《A》}The field study, the first to demonstrate the detrimental cognitive effects of indoor temperatures during a heat wave in a group of young healthy individuals, highlights the need for sustainable design solutions in mitigating the health impacts of extreme heat.

“Most of the research on the health effects of heat has been done in vulnerable populations, such as the elderly, creating the perception that the general population is not at risk from heat waves,” said Jose Guillermo Cedeno-Laurent, research fellow at Harvard Chan School and lead author of the study. “To address ^{《B》}this blind spot, we studied healthy students living in dorms during a heat wave in Boston. Knowing what the risks are across different populations is critical considering that in many cities, such as Boston, the number of heat waves is projected to increase due to climate change.”

Extreme heat can have severe consequences for public health and is the leading cause of death of all meteorological phenomena in the U.S. Temperatures around the world are rising, with 2016 marking the warmest year on record for the past two centuries. While the health impacts of extreme heat are well documented, most studies (あ) have focused on vulnerable populations, including the very young or the elderly, and tend to be epidemiologic studies that use outdoor temperature records. Understanding the effects of indoor temperatures is important given that adults in the U.S. spend 90% of their time indoors.

For this new study, researchers tracked 44 students in their late teens and early 20s living in dorm rooms. Twenty-four of the students lived in adjacent six-story buildings that were built in the early 1990s and had central AC. The remaining 20 students lived in low-rise buildings constructed between 1930 and 1950 that did not have AC. Researchers outfitted each student’s room with a device that measured temperature, carbon dioxide levels, humidity, and noise levels, and tracked their physical activity and sleep patterns with wearable devices.

The study was conducted over 12 consecutive days in the summer of 2016. The first five days consisted of seasonable temperatures, followed by a five-day-long heat wave, and then a two-day cooldown. Each day the students took two cognition tests on their smartphones right after waking up. The first test required students to correctly identify the color of displayed words and was used to evaluate cognitive speed and inhibitory control — or the ability to focus on relevant stimuli when irrelevant stimuli are also present. The second test consisted of basic arithmetic questions and was used to assess cognitive speed and working memory.

The findings showed that during the heat wave, students in the buildings without AC performed worse on the tests than students in the air-conditioned dormitories and experienced decrease across five measures of cognitive function, including reaction times and working memory. During the heat wave, students in buildings without AC experienced 13.4% longer reaction times on color-word tests, and 13.3% lower addition/subtraction test scores compared with students with air-conditioned rooms. (い), these

data show that students in rooms with AC were not just faster in their responses, but also more accurate.

Interestingly, the most significant difference in cognitive function between the two groups was seen during the cooldown period, because outdoor temperatures began to subside but indoor temperatures remained elevated in the dormitories without air conditioning.

“Indoor temperatures often continue to rise even after outdoor temperatures subside, giving the false impression that the hazard has passed, when in fact the ‘indoor heat wave’ continues,” said Joseph Allen, assistant professor of exposure assessment science and co-director of the Center for Climate, Health, and the Global Environment (C-CHANGE) at Harvard Chan School and one of the study’s senior authors. “In regions of the world with predominantly cold climates, buildings were designed to retain heat. These buildings have a hard time shedding heat during hotter summer days created by the changing climate, giving rise to indoor heat waves.”

<https://www.hsph.harvard.edu/news/press-releases/extreme-heat-linked-with-reduced-cognitive-performance-among-young-adults-in-non-air-conditioned-buildings/> (改変あり)

注 dorm(itory): 寮	detrimental: 有害な	vulnerable: 脆弱な
meteorological: 気象の	epidemiologic: 疫学的な	adjacent: 隣接した
outfit ~ with ...: ~に…を装備する		seasonable: 季節にふさわしい
inhibitory: 抑制性の	subtraction: 引き算	subside: おさまる
predominantly: 主に		

問 1. 下線部 《A》についての本文の記述と合致するものを(1)～(5)から 2 つ選び、その番号を [15]、[16]にマークしなさい(順不同)。

- (1) Roughly half of the subjects lived in air-conditioned dormitories while the other half lived in ones that had no AC.
- (2) The study assessed the subjects’ inhibitory control by asking them simple math questions.
- (3) The subjects completed the tasks faster with AC than without it, though their responses were equally accurate under the two conditions.
- (4) The subjects’ rooms were fitted with instruments to record their physical activity and sleep patterns.
- (5) The subjects were asked to point out the color of shown words and make basic calculations.

問2. 下線部《B》が具体的に指すものを(1)～(4)から1つ選び、その番号を[17]にマークしなさい。

- (1) the effect of climate change on the elderly
- (2) the impacts of AC across cities
- (3) the perception of heat waves by general populations
- (4) the risk of extreme heat to a vigorous population

問3. 空所(あ)に入れるのに最も適切なものを(1)～(4)から1つ選び、その番号を[18]にマークしなさい。

- (1) as well
- (2) at a glance
- (3) by mistake
- (4) to date

問4. 空所(い)に入れるのに最も適切なものを(1)～(4)から1つ選び、その番号を[19]にマークしなさい。

- (1) Combined
- (2) In contrast
- (3) Nevertheless
- (4) Similarly

問5. 本文の内容と合致するものを(1)～(5)から2つ選び、その番号を[20]、[21]にマークしなさい(順不同)。

- (1) Due to the makeup of houses, heat waves will not be grave threats in cold regions.
- (2) In the summer of 2016, Boston experienced a heat wave for five days that was preceded and followed by two moderately hot days.
- (3) The new study is significant particularly because climate change is expected to bring about more heat waves in many cities.
- (4) The new study showed that without AC, cognitive function can continue to be affected seriously even after high outdoor temperatures begin to ease.
- (5) Until 2016, temperatures around the world had been rising for two hundred years, which has brought many deaths indoors.

この後の第4問と第5問は記述用解答用紙に解答しなさい。

Windom

第4問 次の英文を読み、後の問いに答えなさい。

There's no escaping magnetic fields — they're all around us. For starters, the Earth itself is like a giant magnet. A spinning ball of liquid iron in our planet's core generates the vast magnetic field that moves our compass needles around and directs the internal compasses of migrating birds, bats, and other animals. On top of that, ever-industrious humans have produced artificial magnetic fields with power lines transport systems, electrical appliances, and medical equipment.

We may not be able to see, hear, feel, or taste the magnetic fields that surround us, but some may wonder whether they can still exert effects on our bodies and brains. This question becomes more pertinent and the answers more tantalizing, as «A» the strength of the magnetic field in question gets cranked up.

【 あ 】

From time to time, a scientific study finds a link between living near high-voltage power lines and illness. Heightened risk of childhood leukemia is the most commonly cited potential health consequence, but whether or not the risk is real has been hard to pin down. One glaring issue is that scientists have yet to figure out the mechanism by which such weak magnetic fields — which are still in the microtesla range for homes next to power lines — could adversely affect the human body. In 2010, the International Commission on Non-Ionizing Radiation Protection concluded that the evidence that living near power lines increases the risk of the deadly blood cancer “is too weak to form the basis for «B» guidelines for exposure to microtesla-range magnetic fields.”

【 い 】

Meanwhile, a team of scientists at the Utilities Threshold Initiative Consortium (UTIC) has been busy working to figure out the threshold at which the human body shows a physiological response to a magnetic field. According to Alexandre Legros, a medical biophysicist at the Lawson Health Research Institute and Western University in London, Ontario and a UTIC scientist, the smallest magnetic field that has reliably been shown to trigger a response in humans is around 10,000 to 20,000 microtesla. But crucially, to produce the effect, the field cannot be static like Earth's magnetic field; rather, it must change directions over time. When these strong, direction-shifting magnetic fields get directed at a human, small electrical currents begin to pulse through the body. Above that threshold, the currents can stimulate super-sensitive cells in the retina, known as graded potential neurons, giving the illusion of a white light flickering even when the affected person is in darkness; these visual manifestations are known as magnetophosphenes.

The 10,000-microtesla threshold is well above the strength of any magnetic field encountered in everyday life. So in what situations might magnetophosphenes occur?

“There's only one circumstance in which you may perceive magnetophosphenes,” says Legros: “If

you're in a magnetic resonance imaging (MRI) machine and moving your head fast." An MRI scanner is essentially a big magnet that produces a powerful magnetic field of around 3 tesla (or 3 million microtesla) — millions of times larger than the fields we're normally exposed to. But because it's a static magnetic field, MRI scanners don't exert any noticeable effect on the body. That would change, however, if the patient inside the scanner were to rapidly move his or her head back and forth. "Moving quickly induces a time-varying field, so by doing that you are inducing currents in different structures of your brain," says Legros. Those currents may lead to nausea, loss of balance, a metallic taste in your mouth, or in some cases, magnetophosphenes.

【 う 】

On par with the magnetic field of an MRI is the one produced by a medical procedure known as transcranial magnetic stimulation (TMS). But unlike MRI, which makes detailed pictures of the inside of the body, the purpose of TMS is to stimulate the brain. That task requires an electric current, which is why TMS relies on a magnetic pulse rather than a static magnetic field. When this pulse is delivered via an electromagnetic coil placed against the scalp, the resulting current jolts a particular part of the brain with the aim of treating neurological diseases like depression.

The magnetic fields associated with MRI and TMS are the strongest that a human might realistically be exposed to. Still, they are "hilariously puny" compared to those found beyond our planet, says Paul Sutter, an astrophysicist at Ohio State University and chief scientist at the COSI Science Center in Columbus, Ohio. At the extreme lies the aptly-named magnetar, which is a rare type of neutron star with a magnetic field one thousand trillion times stronger than Earth's.

【 え 】

If any human ever got close to a magnetar, they would quickly find themselves in dire straits. "Strong magnetic fields can start to do surprising things," says Sutter. At the atomic level, the strong magnetic field would move all of the positive charges in your body in one direction and the negative charges the other way, he explains; spherical atoms would stretch out into ellipses and soon they would start to resemble thin pencils. That drastic change in shape would interfere with basic chemistry, causing the normal forces and interactions between atoms and molecules in the body to break down. "The first thing you would notice is your entire nervous system, which is based on electrical charges moving throughout your body, is going to stop working," says Sutter. "And then you basically dissolve."

【 お 】

Sutter guarantees that our local neighborhood — which he defines as a radius of a few hundred light-years around Earth — has been surveyed and certified magnetar-free. None of these exotic objects

are approaching us, and none of the massive stars nearby are likely to turn into magnetars when they die. So, 《C》 at least for the time being, we can rest easy and take comfort in our planet's own meager magnetic field.

<http://blogs.discovermagazine.com/crux/2018/05/25/magnets-human-body/#.W0xENnYyVaS> (改変あり)

注 pertinent: 適切な	tantalizing: 気を揉ませる	crank up: ~を増す
proton: 陽子	leukemia: 白血病	pin down: ~をはっきりさせる
microtesla: マイクロテスラ (磁束密度の計量単位)		retina: 網膜
flicker: ちらつく	magnetophosphene: 磁気閃光	nausea: 吐き気
transcranial: 経頭蓋	jolt: ~を揺さぶる	puny: 取るに足りない
neutron: 中性子	ellipse: 楕円	

- 問 1. 下線部《A》を現実引き起こしている要因は具体的に何だと考えられるか、本文の内容に即して日本語で述べなさい。
- 問 2. 下線部《B》が現段階で設定されていない理由を本文の内容に即して日本語で述べなさい。
- 問 3. MRI 装置の中で頭を振るとどのようなメカニズムで何が起こるか、本文の内容に即して日本語で述べなさい。
- 問 4. マグネターに接近すると人体が崩壊すると考えられるが、その理由を本文の内容に即して日本語で述べなさい。
- 問 5. 下線部《C》の理由を本文の内容に即して日本語で述べなさい。
- 問 6. 次の段落は本文のどの位置に置くのが最も適切か、【あ】～【お】の記号で答えなさい。

A magnetic field arises whenever a charged particle, like an electron or proton, moves around. Since the electric currents running through blenders, hairdryers, and wires in the walls of our homes consist of flowing electrons, they all generate magnetic fields. Through these sources, the average person is exposed to magnetic fields reaching 0.1 microtesla in strength on a daily basis. By comparison, the Earth's magnetic field, which we are always exposed to (as long as we remain on the planet's surface), is about 500 times stronger. That means the magnetic force penetrating your body as you lounge around your home or spend a day at the office is decidedly insignificant.

空白ページ

Windom

第5問 次の英文を読み、下線部(1)～(4)の日本語の内容を英語にしなさい。

A couple in Southeast London is hoping to raise 22,000 pounds (\$28,075) to double production of their award-winning sake as demand for Japanese rice wine grows in the capital.

Just 18 months after setting up in a small unit in a shared warehouse, Kanpai London Craft Sake Brewery has outgrown its premises and is hoping to move to a bigger site to meet demand for its sake which is now stocked at 17 shops, including luxury department store Selfridges. Its Kanpai Pure Junmai Sake was awarded the Bronze prize at the 2018 International Wine and Spirit Competition.

Co-founders Tom and Lucy Wilson launched their first London Craft Sake in June 2017 at a production site that measured just 350 sq. feet in Peckham in Southeast London.

(1)彼らは現在、2,000平方フィートの用地を確保してもっと大きな酒蔵とバーを建設することを希望しており、12,000本への増産を目指している。 They will offer fresh, unpasteurised namazake by the glass and in taster sets, at different temperatures, as well as in cocktails on site. They will also serve guests sakes from Japanese breweries.

Japanese sake exports reached another record high in 2017 at 54.5 billion yen (\$492 million), marking a 27% increase over the previous year and a reflection of its growing popularity around the globe.

(2)最も急速に成長しつつあった出荷先の1つは英国であり、出荷量は2.8倍に急増した。

Kanpai London Craft Sake Brewery began life in the Wilsons' home with a beer home-brewing kit and *koji-kin* ordered off the internet after they visited Japan together in 2014. They fell in love with sake after visiting breweries and *izakaya*, drinking joints that also serve snacks and finger foods, across the country.

“When we came back from that trip, we were already home-brewing beer, it’s quite normal. We just tried to see if we could make sake,” Tom said. He later attended a course at Gekkeikan Brew School in Kyoto.

Although their brewing method was traditional, their fundraising and sales channels were decidedly 21st century. They raised about 12,000 pounds through crowdfunding for more equipment and production units. They then posted their sake on Instagram through which Selfridges got in touch and organized an exclusive in-store launch last year.

(3)彼らは事業拡大に伴い、講習会と酒蔵ツアーを催し酒造りの過程を見てもらうことを望んでいる。 They are also hoping to export their sake as well, including to Japan.

Until now, the Wilsons have also been working full-time jobs and only dedicated evenings and weekends to the business. Tom, who is head brewer, has now quit his day job in marketing for a Swiss bank to focus on sake-making.

Influenced by the booming craft beer scene in the U.K., they produced small, seasonal exclusive batches in different flavors by changing a single ingredient of the mix each time. (4)330ml瓶は一見地ビールのようなだが、意図的に小さくして日本酒が初めての顧客が試せるようにしたものである。 Still, a 330 ml Kanpai Pure Junmai Sake is considerably expensive, selling at around £15 each.

“We have made half-sized bottles so it’s a price point that hopefully people can have a bit of a go

at trying it,” said Lucy, who is head of communications.

<https://asia.nikkei.com/Business/Business-Trends/London-says-kanpai-to-sake-as-British-brewers-increase-production> (改変あり)

注 brewery: 酒蔵

drinking joint: 酒場

booming: 急成長の

unpasteurised: 低温殺菌されていない

finger food: 指でつまんで食べられる食べ物

batch: ロット、醸造単位

Windom