令和２年度入学試験問題（一般入試）

英　　語

16：00～17：40

注　意

1. 問題冊子は，指示があるまで開かないこと。
2. 問題冊子は７ページ，解答紙は２枚である。「始め」の合図があったら，それぞれページ数および枚数を確認すること。
3. 解答開始前に，試験監督者の指示に従って，すべての解答紙それぞれ２ヵ所に受験番号を記入すること。
4. 解答は，黒色鉛筆（シャープペンシルも可）を使用し，すべて所定の欄に記入すること。欄外および裏面には記入しないこと。
5. 試験終了後，監督者の指示に従って，解答紙の順番をそろえること。
6. 下書き等は，問題冊子の余白を利用すること。
7. 解答紙は持ち帰らないこと。

〔1〕 次の英文を読んで，文中の(ア)～(コ)に入れるのに最も適当な英語一語をそれぞれ書きなさい。

Sometime before the end of the century, there will be a human colony on Mars.*1 It will happen (ア) people finally wake up to the fact that two-way trips to the red planet are unnecessary. By cutting out the return (イ), huge savings can be made and the way will then be open (ウ) establishing a permanent human presence on another world.

A one-way ticket to Mars is (エ) an invitation to a suicide mission. Adequate supplies, including a nuclear power source, can be sent on ahead, and every two years (オ) supplies, and more astronauts, will be sent to the new colony. Mars is relatively inhospitable,*2 but it is far more pleasant (カ) outer space. It has all the raw materials needed for a colony to eventually become self-sufficient. To be sure, life would be crowded and uncomfortable for the pioneers, but so it (キ) for Antarctic explorers a century ago.

What about the risks of leaving people stranded*3 on Mars? Most of the danger of space flight is in the launches and landings, as the two shuttle*4 disasters demonstrated. Eliminating the trip home (ク) therefore halve*5 the overall risk of accidents. The harsh environment of Mars would undoubtedly (ケ) the life expectancy*6 of the colonists, but astronauts on a round-trip would be exposed (コ) comparable health risks from months of space radiation*7 and zero gravity.

【Adapted from "A One-Way Ticket to Mars," by Paul C. W. Davies, in *What Are You Optimistic About?*, edited by John Brockman, Harper Perennial, 2007, pp. 162–163】

〔注〕 ＊1 Mars：火星　　＊2 inhospitable：人間が住むのに適さない
＊3 strand：取り残す　　＊4 shuttle：スペースシャトル
＊5 halve：半分に減らす　　＊6 life expectancy：平均寿命
＊7 space radiation：宇宙線(宇宙空間を飛び交う高エネルギーの放射線)

〔2〕 次の英文を読んで設問に答えなさい。

Despite there being a long history of insect-eating in rural parts of Japan, for the average consumer nowadays eating bugs is too much to ask.(1)

But like many edible*1 insect ventures that are emerging overseas, one Kyoto startup*2 has been bitten by the same bug and is making cricket*3 powder protein bars designed to be acceptable for the masses.

BugMo Co. not only sees crickets as a much more sustainable protein source compared to beef, chicken or pork, but ultimately an essential ingredient in a whole new food culture in an approaching food crisis driven by decreasing resources and climate change.

"There are many edible insect ventures emerging overseas because of insects' importance as a sustainable protein source. But our focus is on food production. Of course, with the trend it would be great if we can also help reduce some of the planet's environmental problems,"(2) Fu Nishimoto, 21, of BugMo, said in a recent interview.

The company's current product, which it sells to athletes and health-conscious consumers, contains 50 crickets in each protein bar and retails for ¥500.(3) It is sold online as well as to wholesalers,*4 at events, and even in an "insect eating vending machine"*5 located in Kumamoto Prefecture.

The bars, which come in chocolate and matcha flavors, contain dried fruits and nuts, and are packed with 10 grams of protein and the nine amino acids*6 essential for muscle-building, according to BugMo.

BugMo currently sells about 1,000 protein bars per month but is aiming to have the product on offer in 100 gyms and health food stores around the country by fall. The company's website describes the bars as being gluten*7 free with no artificial ingredients.

"The great thing about crickets is they are low-fat, high-protein. Those who exercise will use different combinations of supplements with protein and omega-3 fatty acids*8 but if they use our product they get all of it in one," Nishimoto said.

"Our first goal is to reach 10 stores that regularly carry our cricket protein bars and become repeat customers. I think they will spread by word of mouth by people who have eaten them."

Both Nishimoto and the company's 32-year-old chief executive Yusuke Matsui noted that having customers overcome the disgust they might feel about eating bugs, with their sharp legs, wings, eyes and other ugly body parts, is essential to their business model.

In the business of entomophagy (insect consumption), overcoming this disgust factor is a

huge obstacle, so the bugs must not be noticeable, the BugMo co-founders say, and must taste good.

"We thought that, no matter how nutritious they are, if people see the actual crickets, it would be difficult for them to accept. So that's why we decided to make it a powder," Nishimoto said.

Once people become used to eating crickets in a crushed powder, or flour, which isn't bitter or bad smelling, but "nutty"*9 or "smoky" in flavor, they can be more bold, Matsui said.

"(The powder form) helps people think bugs are okay to eat even if, next time, they try something in the shape of a bug. We've seen people try it through our own taste experiments. The next thing is to bring out the umami," Matsui said.

BugMo, a wordplay*10 on bug movement, currently uses cricket powder imported from Thailand, but the company plans to cultivate all its crickets in Japan within the next several years. The company has already set up a small pilot*11 factory, cultivating about 40,000 crickets in Shiga Prefecture.

Aside from the nutritional benefits of cricket protein, with its essential minerals and vitamins such as high levels of iron, calcium, and fiber, the eating of insects is often praised as being relatively environmentally-friendly compared to other sources of protein, as well as being more efficient.

A 2013 report by the United Nations Food and Agriculture Organization (FAO)*12 recommends including edible insects in people's diets in order to reduce humanity's bad effects on the environment. Nearly 2,000 edible insect species have been identified worldwide.

Crickets can be raised for food twice as efficiently as chickens, at least four times more efficiently than pigs, and 12 times more efficiently than cows. They also require 2,000 times less water, and discharge 100 times less greenhouse gas.*13

Crickets, which take six to eight weeks to breed, consume fewer resources than cows and chickens, thus reducing the need for the production and transport of grain feed. The need for more and more land for cows is one of the major driving forces behind deforestation,*14 the FAO report states.

【Adapted from "Kyoto Startup Aims to Take Bite out of Bug's 'Ick Factor'," by Dave Hueston, *The Japan Times*, March 16, 2019, p. 3】

〔注〕 ＊1 edible：(毒性がなくて)食べられる　＊2 startup：新会社，新興企業
＊3 cricket：コオロギ　＊4 wholesaler：卸売業者
＊5 vending machine：自動販売機　＊6 amino acid：アミノ酸
＊7 gluten：グルテン(タンパク質の一種)
＊8 omega-3 fatty acid：オメガ3脂肪酸(体内の様々な機能にとって重要な多価不飽和脂肪酸の一種)
＊9 nutty：木の実に似た　＊10 wordplay：しゃれ，ことば遊び
＊11 pilot：試験的な
＊12 United Nations Food and Agriculture Organization (FAO)：国連食糧農業機関
＊13 greenhouse gas：温室効果ガス　＊14 deforestation：森林伐採，森林破壊

〔設　問〕

1. 下線部(1)の理由を，本文の内容に沿って，60字程度の日本語で具体的に書きなさい。

2. 下線部(2)について，「コオロギ食」が環境にもたらす良い影響を二点，本文の内容に沿って，それぞれ60字程度の日本語で書きなさい。

3. 下線部(3)を日本語に訳しなさい。

4. 本文の内容に関する次の文(1)～(5)を読み，正しいものには○，間違っているものには×を，それぞれ記入しなさい。
(1) BugMo's current products are available exclusively online.
(2) People who eat cricket protein bars are interested in health and fitness.
(3) People who eat cricket protein bars will have less need to consume supplements.
(4) "Entomophagy" means the study of insects.
(5) The corporate name of BugMo is derived from a kind of cricket.

〔3〕 次の英文を読んで設問に答えなさい。

When I was a little boy, I had one dream and one dream only: I wanted to grow up to be an economist and data scientist. No. I'm just kidding. I wanted desperately to be a professional basketball player, just like my hero, Patrick Ewing, a star player for the New York Knicks basketball team.

I sometimes suspect that inside every data scientist is a kid trying to figure out why his childhood dreams didn't come true. So it is not surprising that I recently investigated what it takes to become a player in the National Basketball Association (NBA).*1 The results of the investigation were surprising. In fact, they demonstrate once again how good data science*2 can change your view of the world, and how counterintuitive*3 the numbers can be.

The particular question I looked at is this: are you more likely to succeed in the NBA if you grow up poor or middle-class?

Most people would guess the former. Conventional wisdom says that growing up in difficult circumstances, such as in a poor neighborhood with a single, teenage mom, helps develop the ambition necessary to reach the top levels of this intensely competitive sport.

This view was expressed by William Ellerbee, a high school basketball coach in Philadelphia,*4 in an interview with a sports magazine. "Suburban kids tend to play for the fun of it," Ellerbee said. "Inner-city kids look at basketball as a matter of life or death." I, unfortunately, was raised by married parents in the New Jersey*5 suburbs. LeBron James, the best player of my generation, was born poor to a sixteen-year-old single mother in Ohio.*6

Indeed, an internet survey I conducted suggested that the majority of Americans think the same thing Coach Ellerbee and I thought: that most NBA players grow up in poverty.

Is this conventional wisdom correct?

Let's look at the data. There is no comprehensive data source on the socioeconomics*7 of NBA players. By using data from a whole bunch of sources, we can figure out what family background is actually most conducive*8 to becoming an NBA player. This study, you will note, uses a variety of data sources, some of them bigger, some of them smaller, some of them online, and some of them offline. As exciting as some of the new digital*9 sources are, a good data scientist would not neglect to consult old-fashioned sources if they can help. The best way to get the right answer to a question is to combine all available data.

The first relevant data is the birthplace of every player. For every county in the United States, I recorded how many black and white men were born in the 1980s. I then recorded how many of them reached the NBA. I compared this to a county's average household income. I also controlled for the racial demographics*10 of a county, since black men are about forty times more likely than white men to reach the NBA.

The data tells us that a man has a substantially better chance of reaching the NBA if he was born in a wealthy county. (1) A black kid born in one of the wealthiest counties in the United States, for example, is more than twice as likely to make the NBA as a black kid born in one of the poorest counties. For a white kid, the advantage of being born in one of the wealthiest counties compared to being born in one of the poorest is 60 percent.

This suggests, contrary to conventional wisdom, that there are fewer poor men in the NBA than we would expect. However, this data is not perfect, since many wealthy counties in the United States, such as New York County (Manhattan),*11 also include poor neighborhoods, such as Harlem.*12 So it's still possible that a difficult childhood helps you make the NBA. (2) We still need more clues, more data.

So I investigated the family backgrounds of NBA players. This information was found in news stories and on social networks. This method was quite time-consuming, so I limited the analysis to the one hundred African-American NBA players born in the 1980s who scored the most points. Compared to the average black man in the United States, NBA superstars were about 30 percent less likely to have been born to a teenage mother or a single mother. In other words, the family backgrounds of the best black NBA players also suggest that a comfortable background is a big advantage for achieving success.

That said, neither the county-level birth data nor the family background of a limited sample of players gives perfect information on the childhoods of all NBA players. So I was still not entirely convinced that two-parent, middle-class families produce more NBA stars than single-parent, poor families. The more data we can use to investigate this question, the better.

【Adapted from *Everybody Lies*: *What the Internet Can Tell Us About Who We Really Are*, by Seth Stephens-Davidowitz, Bloomsbury, 2018, pp. 33–36】

〔注〕 ＊1 National Basketball Association：NBA（全米プロバスケットボール協会）
＊2 data science：データサイエンス（主に大量のデータを分析して，情報や法則性などを導き出そうとする科学の一分野）
＊3 counterintuitive：直感に反した
＊4 Philadelphia：フィラデルフィア市（米国北東部のペンシルバニア州の都市）
＊5 New Jersey：ニュージャージー州（米国北東部の州）
＊6 Ohio：オハイオ州（米国中東部の州）
＊7 socioeconomics：社会経済学
＊8 conducive：貢献する
＊9 digital：デジタル型の
＊10 demographics：人口統計（値）
＊11 Manhattan：マンハッタン区（米国北東部のニューヨーク州の地区）
＊12 Harlem：ハーレム（マンハッタン区北部の地区）

〔設　問〕

1. 本文で述べられている “conventional wisdom” について，その内容を 80 字程度の日本語で具体的に書きなさい。

2. 下線部(1)を日本語に訳しなさい。

3. 下線部(2)の理由を，本文の内容に沿って 120 字以内の日本語で書きなさい。

4. 本文の内容に関する次の文(1)~(5)を読み，正しいものには○，間違っているものには×を，それぞれ記入しなさい。

(1) The author's childhood dream was to become a scientist and professional basketball player.

(2) Data science sometimes reveals that people's beliefs are contrary to fact.

(3) Thanks to Coach Ellerbee, LeBron James, who was poor in his childhood, became a famous basketball player.

(4) The author used only digital data in his research.

(5) The author thinks that, because there is only limited information about the childhoods of all NBA players, further investigation is needed.

〔4〕 (英作文)

環境の変化につれて，今後未来において，人間の体に変化が生じる可能性があると思いますか。あなたの考えを 100 語程度の英語で書きなさい。