

福井大学

平成 30 年度入学者選抜学力検査問題

〈前期日程〉

外 国 語

英 語

(医学部 医学科)

注 意 事 項

- 1 試験開始の合図があるまでこの冊子を開いてはいけない。
- 2 問題はⅠからⅣまでである。
試験開始の合図のあとで問題冊子の頁数(1～11頁)を確認すること。
- 3 解答は必ず解答用紙の所定の欄に記入すること。
所定の欄以外に記入したものは無効である。
- 4 解答用紙は持ち帰ってはいけない。
- 5 問題冊子は持ち帰ってよい。

I

次の英文を読み、空所(1)から(15)を補うのに適切な1語を下の語群内の(a)から(o)より選び、記号で答えなさい。なお、(6)は2か所あり、同じ語が入ります。

Since discovering the existence of DNA, scientists have been diligently studying its structure and function. DNA analysis has revealed a number of facts that had been (1) for thousands of years. One example has to do with the DNA of people from India. Analysis of India's genes can reveal many interesting and useful things about their ancestors, the (2) of their caste system*, and their physical problems.

Indian people have long been (3) for their great diversity. A recent study of their genes now shows us that most Indians today can be traced back to just two distinct ancient populations, one from the north, one from the south. The first group are the ancestors of people who came from Europe or the Middle East; the second group are people from southern Asia. The gene (4) the researchers collected showed that almost all Indian people have a blend of these two ancestral groups, with the percentage of the blend, of course, being different in different individuals. According to research conducted by Harvard Medical School geneticist* David Reich and his colleagues, genetic diversity among Indians is four times greater than that of Europeans. This probably means that while their ancestors were originally two completely different groups, they divided into many groups after the two original groups mixed, and now each group has been living socially (5) from other groups. Inside each small group, the "members" kept their own genetic (6) because they didn't marry into other groups.

This discovery tells us a variety of things about India's population. The first is that they are especially (7) to genetic disease. People who live in endogamic (that is, marrying within the group) societies have a very difficult time developing stronger genes against disease. By marrying outside their group, however, they can produce offspring who (8) immune system genes from each parent. Because this doesn't happen in endogamic societies, their members have a high susceptibility* to genetic disease.

The second thing that the results of the Harvard gene study shows is that this phenomenon may have influenced the development of India's caste system. The caste system has existed in India for centuries, and although great efforts have been made to reduce its divisive nature, it remains active and (9). What the geneticists now say is that endogamy within castes has kept social groups relatively separate from thousands of years and has defined India's population in genetic terms. As Reich put it, "There are populations that have lived in the same town and same village for thousands of years without exchanging genes." The history of India reinforces this fact. Indian indigenous* people, the best known

of which were Dravidians, were invaded and conquered by many other people, particularly Europeans from the north and various Middle Easterners. This invasion began with the Greeks under Alexander the Great, was (10) by Islamic people from the Middle East, and so on. Being in a stronger position, these invaders naturally occupied the higher (11) of the caste system. According to one study, a higher proportion of higher caste members shares genetic (6) with the northern ancestral group. Thus, Indian social groups were divided and fixed at a very early time, and the (12) caste system has kept them separate.

The third point that the Harvard DNA analysis implies is that because each group has been independent and separate from other groups, India has not been able to develop a distinct identity as one nation. Of course, there was the movement for independence after World War II, but it was led by a group of intellectuals who had been educated in a Western way. The motivation for fighting for independence was to stop Indians' (13) by Great Britain and other Western countries. It did not grow out of the people's sense of national identity.

These three phenomena are just some examples of what DNA analysis of the Indian people can tell us. History has sometimes been distorted, depending on who or which side wrote it. But DNA analysis doesn't distort: it (14) in facts. In the years ahead, DNA analysis will become an ever more (15) item in the social historian's tool kit.

—From "The Map of India's Genetic Diversity," *The Guardian Weekly*, October 23, 2009.

Notes: caste system インドのカースト制度 geneticist 遺伝学者
susceptibility 罹りやすいこと indigenous 土着の

語 群			
(a) controversial	(b) deals	(c) exploitation	(d) followed
(e) important	(f) inherit	(g) isolated	(h) noted
(i) origin	(j) ranks	(k) rigid	(l) samples
(m) traits	(n) unknown	(o) vulnerable	

II

次の英文を読んで下の質問に答えなさい。すべて日本語で解答すること。

Three years ago, my father woke up in the middle of the night in our home in Harare, Zimbabwe, with chest pain and palpitations*. When that happened once before, we'd waited 3 hours for an ambulance, so my father convinced my mother that ambulances were too unreliable. They decided to wait until 7 a.m., when our primary care doctor opened his office. When it was time to go, my mother helped my father climb slowly into the car. She could tell he was in pain, and she drove quickly but gently so that he could be the first patient seen by the doctor that Saturday morning.

Our family doctor took one look at an EKG* and knew that the situation was serious. He called the insurance company to authorize an emergency evacuation* to South Africa. But the insurance agent refused to approve the evacuation without the expert opinion of a cardiologist*. It was 7 a.m. on a Saturday, and the handful of cardiologists in Zimbabwe were asleep.

While the doctor argued with the insurance company, my father whispered to my mother, "I think I'm going." She could see the terror in his eyes before they rolled back and he collapsed into the waiting-room armchair. My mother screamed, and the doctor ran in, put my father on the floor to try to revive his lifeless body. The insurance agent called back 30 minutes later to approve the evacuation—but my father was already gone.

A year after we lost my father to cardiomyopathy*, I began medical school in New York. Aware of the disease's genetic basis, I underwent the screening echocardiogram*. An ocean away from home, I had an experience with cardiac* care that could not have been more different from my father's.

The technician paused suddenly and then called the attending* for help. The doctor, himself confused, spent several more minutes looking at images of my heart before he called a more experienced colleague. I listened intently as the senior doctor explained to his colleague the abnormalities visible on the screen, diagnosing me with an alternative of the disease that had killed my father.

As a physician-in-training, I never imagined I'd become a teaching case myself. I began writing exam findings in my head, "A 25-year-old, previously healthy medical student has an echocardiogram after his father dies suddenly. . . ."

I reacted the only way I knew how. I worked extra hard in class to understand cardiac pathophysiology* (it didn't come naturally). I spent hours in the library scrolling through academic articles and abusing my printing privileges to learn more about my genetic curse. I became the most informed health care consumer possible.

A week after my diagnosis, I met with the senior cardiologist. He'd sent my scans to an international expert. Together, they decided that I should have an automatic implantable cardioverter-defibrillator (ICD)* placed as soon as possible. It would save my life if I had a potentially fatal arrhythmia*. My father had struggled, in his last hours, to find a heart specialist anywhere in Zimbabwe. In a single hour, I'd received elite care from four cardiologists—more than the number serving Zimbabwe's entire population of 14 million.

My father had had a previous heart attack, was overweight, and continued to smoke and drink heavily. He routinely visited our primary care doctor, but once his checkup was over, the two of them would share cigarettes as they caught up on each other's lives. Health care systems in Zimbabwe and other developing countries still lack a culture of prevention. Most people served by the public health care sector do not routinely receive primary care services, and when they do, their care is primitive at best. By contrast, my U.S. doctors urged me to have an echocardiogram and then prescribed interventions to protect my health and my heart. They instructed me to reduce my caffeine and alcohol consumption, and have an ICD implanted as soon as possible.

Had my father received preauthorization*, he would have had to survive a 3-hour helicopter flight to a South African hospital where his health insurance would not have covered the full cost of his care. When my surgery date arrived, I walked across the street from my dorm to the hospital. Even the surgery was brand new—my defibrillator* was placed under the skin. This technique was being tested for young patients who wanted an active lifestyle. Once the cardiologists finished, a surgeon closed the cut for the best results—recognizing that I might still want to impress people with my shirt off. The hospital team discharged* me with antibiotics* and painkillers, follow-up appointments, and pamphlets about my new ICD.

I was back at medical school in a week, but each time I walked into the modern hospital, I thought of my father. I was lucky. I wondered whether my father would have lived longer with my lucky combination of education, resources, and geography.

⁽³⁾—From Khameer K. Kidia, "Disheartening Disparities," *New England Journal of Medicine*, 374, March 10, 2016, 一部改変.

Notes: palpitation	動悸	EKG	心電図	emergency evacuation	緊急搬送
cardiologist	心臓専門医	cardiomyopathy	心筋症	echocardiogram	心エコー図
cardiac	心臓の	attending	主治医	pathophysiology	病態生理学
implantable cardioverter-defibrillator	埋め込み型除細動器				
arrhythmia	不整脈	preauthorization	事前の許可		
defibrillator	除細動器	discharge	退院させる	antibiotic	抗生物質

- 問 1 筆者の父親の治療が手遅れになった直接的な理由を述べなさい。
- 問 2 下線部(1)を和訳しなさい。
- 問 3 下線部(2)は、筆者のどのような具体的な行動を指しているのか明らかにしなさい。
- 問 4 筆者はアメリカの医療と比較して母国での医療をどのように観察しているのか説明しなさい。
- 問 5 下線部(3)について、education, resources, geography の内容を具体的に明らかにしながら筆者がそのように考える理由を述べなさい。

(白 紙 頁)

III

次の英文を読んで下の質問に答えなさい。ただし、問1以外は日本語で解答すること。

Parents and policy makers have become obsessed* with getting young children to learn more, faster. But the picture of early learning that drives them is exactly the opposite of the one that emerges from developmental science.

In the last 30 years, the United States has completed its transformation to an information economy. Knowledge is as important in the 21st century as capital was in the 19th or land in the 18th. In the same 30 years, scientists have discovered that even very young children learn more than we once thought possible. Put those together and our preoccupation* with making children learn is no surprise.

The trouble is that most people think learning is the sort of thing we do in school, and that parents should act like teachers. Studies prove that high-quality preschool helps children thrive.

But in fact, (1). Young children were learning thousands of years before we had ever even thought of schools. Children in exploring cultures learned by watching what the people around them did every day, and by playing with the tools they used.⁽¹⁾

Experimental studies show that even the youngest children are naturally driven to imitate. Back in 1988, Andrew Meltzoff of the University of Washington did a study in which 14-month-olds saw an experimenter do something weird—she tapped her forehead on top of a box to make it light up. A week later, the babies came back to the lab and saw the box. Most of them immediately tried to tap their own foreheads on the box to make the light go on.

In 2002 Gyorgy Gergely and his colleagues did a different version of this study. Sometimes the experimenter's arms were wrapped in a blanket when she tapped her forehead on the box. The babies seemed to figure out that when the experimenter's arms were wrapped up, she couldn't use her hands, and that must have been why she had used her head instead. So when it was the babies' turn they took the easy route and tapped the box with their hands.

In other words, (2)—they take note of who you are and why you act.

We take it for granted that (3). But new studies of “active learning” show that when children play with toys they are acting a lot like scientists doing experiments. Preschoolers* prefer to play with the toys that will teach them the most, and they play with those toys in just the way that will give them the most information about how the world works.

In one recent experiment, Aimee E. Stahl and Lisa Feigenson of Johns Hopkins showed 11-month-old babies a sort of magic trick. Either a ball appeared to pass through a solid wall, or a toy car appeared to roll off the end of a shelf and remain suspended in thin air. The babies

apparently knew enough about everyday physics to be surprised by these strange events and paid a lot of attention to them.

Then the researchers gave the babies toys to play with. The babies who had seen the ball vanish through the wall banged* it; those who'd seen the car hovering* in thin air kept dropping it. It was as if they were testing to see if the ball really was solid, or if the toy car really did defy gravity.

It's not just that (4). In fact, studies show that explicit* instruction, the sort of teaching that goes with school and "parenting," can be limiting. When children think they are being taught, they are much more likely to simply reproduce what the adult does, instead of creating something new.

My lab tried a different version of the experiment with the complicated toy. This time, though, the experimenter acted like a teacher. She said, "I'm going to show you how my toy works," instead of "I wonder how this toy works." The children imitated exactly what she did, and didn't come up with their own solutions.

The children seem to work out, quite rationally, that if a teacher shows them one particular way to do something, that must be the right technique, and there's no point in trying something new. But as a result, the kind of teaching that comes with schools and "parenting" pushes children toward imitation and away from innovation.

(5). Parents and policy makers care about teaching because they recognize that learning is increasingly important in an information age. But the new information economy, as opposed to the older industrial one, demands more innovation and less imitation, more creativity and less conformity*.

In fact, children's naturally evolved learning techniques are better suited to that sort of challenge than the teaching methods of the past two centuries.

We don't have to make children learn, we just have to let them learn.

(3)

—From *The New York Times*, July 30, 2016, 一部改変.

Notes: obsessed (考えに)取り付かれた	preoccupation 夢中(になること)	
preschooler 未就学児	bang たたく	hover 浮かぶ
explicit 明示的な	conformity 順守	

問 1 本文の空所(1)～(5)に入る最も適切なものを下のA～Eからそれぞれ1つずつ
選び、記号で答えなさい。ただし、文頭に来る語も小文字で記している。

- A. there is a deep irony here
- B. babies don't copy mindlessly
- C. young children don't need to be taught in order to learn
- D. young children "get into everything"
- E. schools are a very recent invention

問 2 下線部(1)を和訳しなさい。

問 3 Meltozoff と Gergely らの実験には、どのような違いがあるのか明らかにしなさい。

問 4 被験者の乳児たちが下線部(2)に記されたように行動した理由は何であると考えられるの
か。その理由を述べなさい。

問 5 下線部(3)について、筆者がこのように主張する理由を述べなさい。

(白 紙 頁)

IV フランスの哲学者シモーヌ・ヴェイユは、「われわれは過渡期にある。しかし何にむかっ
ての過渡なのか？」と述べています。「現在は～の過渡期である。」という表現が使われることがありま
す。現在は何の過渡期であるとあなたは考え、その理由を110～120語の英文で述べなさい。な
お、文末に使用した語数を記すこと。