滋賀医科大学

令和３年度

医学科一般選抜（前期日程）

問 題 冊 子

英　　語

（注　意）

1. 問題冊子は試験開始の合図があるまで開かないこと。
2. 問題冊子は表紙のほか９ページである。
3. 試験中に問題冊子及び解答用紙の印刷不鮮明，ページの落丁・乱丁等に気付いた場合は，手を挙げて監督者に知らせること。
4. 解答用紙のすべてに受験番号及び氏名をはっきり記入すること。
5. 解答はすべて解答用紙の所定の解答欄に明瞭に記入すること。
6. 解答に関係のないことを書いた答案は，無効にすることがある。
7. 本学受験票を机の右上に出しておくこと。
8. 試験時間は 90 分である。
9. 問題冊子は持ち帰ってもよいが，解答用紙は持ち帰らないこと。

英　　語　（3問題）

Ⅰ．次の文章を読んで，下の設問に本文の内容に沿って答えよ。記号以外の解答は全て日本語ですること。右側に＊印のある語には注がある。　（配点 92 点）

I scrambled* up a ladder to the tin roof of our house, clutching* a book about the evolution of animals. I was 10 years old, and I had just finished cooking dinner for my entire family — a task that was my daily responsibility. From my perch* on the roof, I could look out at the slum where we lived in a small town in India. However, that was not what drew me to the roof[1]: We did not have any lamps in our house, so I needed sunlight to read my book. I did not know it[2] at the time, but that study routine was my ticket to a career as a scientist.

My father — a laborer — did not let me attend school initially. I was always jealous of my brother when he set off to school each day. So, one day, when I was 5 years old, I followed him and hid under the teacher's desk. She noticed me and sent me home. However, the next day, she called my father and told him that he should put me in school. Much to my delight, my father said yes.

I had a passion for learning, and — despite the hunger pangs* I went to school with most days — I quickly shot[3] to the top of my class. When I was 10 years old, my father sent me to a better school[4] outside our neighborhood, one that was mostly attended by students from wealthier families. I was at the top of the class there, too. However, I was treated poorly by my classmates who saw me as a child of the slums. I also suffered from embarrassment during biology labs because I was very short — due to malnutrition*, I suspect — and I had to stand on a chair to see into the microscope.

When I graduated from high school, I wanted to become an engineer. My father was eager for me to attend university, but he told me I could not study engineering because it was for boys; he said I should study food science instead. My initial reaction was that food science was the last thing I wanted to study. After a childhood preparing meals for my family, there was[5] nothing I hated more than cooking.

I enrolled in a food science program anyway, and I quickly discovered that food science was not so bad after all. It was a real science — something similar to chemistry — that involved hypothesis* testing and experimentation. Soon enough, I was hooked.[6]

While attending university, I lived in a hostel* near campus, paying my tuition and living expenses with the help of student loans my father secured[7] for me as well as my side job as a research assistant. My room had a lamp, and I was thankful every night that I had light to study under[8] — something I have learned never to take for granted.

In the years that followed, I received a Ph.D. in food engineering and was appointed to a faculty position — milestones* that felt far removed from my beginnings in the slums. However, shortly thereafter, I began a project that brought me back to my roots.[9] I worked with a company that wanted to find solutions to malnutrition in India's slums. When representatives from the company first approached me, they said, "You'd need to go to the slums and talk with people"— thinking that I had never done that before.[10] "That's no problem," I replied. "I grew up in the slums."

As part of my work with the company, I modified the ingredients in a traditional Indian flatbread called *chapati*, which I had made every day growing up. I realized it was the perfect vehicle[11] to introduce more nutrition into the diet of poor people, because it was a basic food eaten at every meal. I experimented with the ingredients and landed on a recipe that replaced wheat flour with cheap, locally grown grains that contain more minerals, protein, and dietary fiber.[12]

Other researchers laughed at me when I started to work on *chapati* because they did not think there would be much science, or innovation, associated with it. However, I have since proved them wrong. My work has won numerous national and international awards, and companies, nonprofit organizations, and government agencies have all sought my expertise*.

In my life, I have faced poverty, hunger, and discrimination. However, I did not let them hold me back.[13] I pushed through the obstacles and learned lessons from them that helped move me forward. I hope others can take inspiration from my story and realize that — despite the challenges they may be facing — they, too, can persevere*.

(出典 https://science.sciencemag.org/content/369/6499/110 より改変引用。)

注：

scramble(d)*＝よじ登る

clutching*＞clutch＝しっかりつかむ

perch*＝とまり木，(高い)席

pang(s)*＝(空腹などによる)痛み

malnutrition*＝栄養失調[不良]

hypothesis*＝仮説，仮定

hostel*＝寄宿寮

milestone(s)*＝マイルを示す標石，画期的事件

expertise*＝高度な専門的技能[知識]

persevere*＝耐える

設問 1. Explain the roof's attraction in underlined item[1] drew me to the roof.

設問 2. What does underlined item[2] it refer to?

設問 3. What does underlined item[3] shot mean?

A. wanted　　B. led　　C. presented　　D. advanced

設問 4. How was the author treated at the[4] better school to which she was sent by her father?

設問 5. Translate underlined item[5] there was nothing I hated more than cooking.

設問 6. Why was the author reluctant to choose food science as her field of research?

設問 7. What does underlined item[6] I was hooked mean?

設問 8. What does underlined item[7] secured mean?

A. advanced　　B. got　　C. offered　　D. gave

設問 9. Translate underlined item[8] I was thankful every night that I had light to study under — something I have learned never to take for granted.

設問10. What does underlined item[9] brought me back to my roots mean?

設問11. Why did the representatives of the company think that I had never done that before[10]? Be sure to clarify what the second "that" refers to.

設問12. What does underlined item vehicle[11] mean?

A. way　　B. truck　　C. bread　　D. food

設問13. What do we know about her effort and intention from underlined item I experimented with the ingredients and landed on a recipe that replaced wheat flour with cheap, locally grown grains that contain more minerals, protein, and dietary fiber[12]?

設問14. How did some of her colleagues react when she chose to work on *chapati*?

設問15. Translate underlined item I did not let them hold me back.[13]

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Every spring, densely packed bunches of small, brown-and-white songbirds known as garden warblers make a dangerous, week-long journey from their winter homes in Africa to their summer breeding grounds in Europe. The warblers fly thousands of miles, across the Sahara and the Mediterranean Sea, on the way to their destinations[1]. It is an exhausting trip, and the warblers make numerous stops to rest and feed along the way. During these breaks, the birds need to catch up on sleep, refill their fat stores, and somehow manage to avoid being eaten by predators*, including the hungry raptors* that migrate* alongside them.

A study published in *Current Biology* revealed one way that migrating warblers manage[2] these dangers and demands: They adjust their sleep postures depending on their physical condition and physiological* needs. Plump, well-muscled birds tend to sleep with their heads held upright, while slimmer warblers tuck* their heads in their feathers, a posture that makes them more vulnerable to[3] predation* but helps them conserve their much needed energy. "Migratory warblers have to make trade-offs* between staying safe and saving energy," said Leonida Fusani, a behavioral physiologist at the University of Vienna and the lead author of the paper.

Dr. Fusani worked with a doctoral student, Andrea Ferretti, and several other colleagues to study garden warblers that had stopped on the island of Ponza during their spring migration. The small, rocky isle, off the western coast of Italy, is a popular stopover for northbound birds, which typically arrive drained after a 300-plus-mile flight over open water. The researchers caught warblers with nets, and then gave each one a brief physical exam before transferring it to a custom-built cage for observation. Some of the warblers were strong, with heavy bodies, big muscles and plenty of body fat. Others seemed to be struggling, and appearing thin and worn down by their journeys.

Birds in good condition slept more during the day than those in poor condition, the scientists found, perhaps because those birds did not need to spend as much time looking for food. At night, the stronger birds generally slept facing forward, with their heads up. The leaner birds, on the other hand, literally[4] turned their heads around and tucked them under the feathers on their shoulders.

Dr. Fusani, Mr. Ferretti and their colleagues conducted several follow-up studies to try to make sense of this pattern. In one, they used a heat-imaging camera to monitor the body temperature of warblers sleeping in the head-up position. These birds lost heat primarily through their heads, especially from the area around their eyes. By tucking their heads into their feathers, skinny warblers may be able to minimize this heat loss, the researchers said. Additionally, when the scientists placed the birds overnight in a respirometry chamber, a machine for breath analysis, they discovered that warblers sleeping in the tucked position had lower energy-burning rates than those that slept with their heads up.

Together, the findings suggest that migrating birds that arrive at their resting places in poor condition may adjust by selecting a sleeping posture that preserves their decreasing supply of energy. "Evolution has created these behavioral flexibilities that allow birds to adjust if they have to use more fat stores on this leg[5] because they ran into a storm or it got colder than they anticipated," said Scott McWilliams, who studies bird ecology and physiology at the University of Rhode Island, and is an author of the paper.

However, if the tucked position has such benefits, why do all the warblers not use it? Dr. Fusani and his colleagues speculated* that the posture might make birds less alert to potential threats. To test this theory, they simulated the sound of an approaching predator by playing a recording of leaves being stepped on as the warblers slept. Sure enough, birds with heads in the tucked position took longer to respond than those that slept with their heads facing forward. "The cost of sleeping with heads tucked in their feathers is a slower reaction time," Mr. Ferretti said.

The research could help us better understand the general benefits and function of sleep, the scientists said, as well as how migrating animals can control it to increase their chances of survival[6]. "We never suspected that sleep pattern was an important factor in migratory strategy[7]," Dr. Fusani said.

(出典：https://www.nytimes.com/2019/08/20/science/migratory-birds-sleep.html?action=click&module=MoreInSection&pgtype=Article&region=Footer&contentCollection=Europe より改変引用。)

注：

predator(s)*＝捕食動物

raptor(s)*＝猛禽類(bird of prey)

migrate*＝移住する，移動する

physiological*＝生理学の，生理学的な

tuck*＝しまい込む，たくし込む

predation*＝捕食

trade-offs*＝妥協

speculate(d)*＝推測する

設問 1. What does underlined item destinations[1] refer to?

A. safe places on the African continent

B. northern locations for reproducing their species

C. places that provide food and rest during their journey

D. the next resting place along the route

設問 2. What do warblers need to be careful of while they migrate?

設問 3. What does underlined item manage[2] mean?

A. deal with　　B. live with　　C. come across　　D. fail to meet

設問 4. What does underlined item vulnerable to[3] mean?

A. immune to　　B. protected from

C. exposed to　　D. prepared for

設問 5. Why did the researchers choose the island of Ponza for their research?

設問 6. Explain the initial treatment given to the warblers by the researchers after they caught them.

設問 7. What does underlined item literally[4] mean?

A. easily　　B. immediately　　C. lightly　　D. actually

設問 8. How do the researchers explain why stronger warblers tend to sleep more during the day than the thinner ones?

設問 9. Explain the effects of the warblers' two different sleeping postures as measured by the heat-imaging camera.

設問10. Explain what the researchers found after keeping the birds in a respirometry chamber for a night.

設問11. What does underlined item [5] this leg mean?

A. a long segment of the migration route over water

B. the storage of fat for energy on part of the body

C. the warblers' standing position while sleeping

D. the warblers' behavioral flexibilities

設問12. What is the ultimate cost that warblers could pay for sleeping with their heads tucked into their feathers?

A. to be quick

B. to be better rested

C. to be less rested

D. to be eaten

設問13. What does underlined item [6] their chances of survival mean?

A. the level of their vital heat

B. the likelihood of their survival

C. the amount of their energy

D. their means of survival

設問14. Translate underlined item [7] "We never suspected that sleep pattern was an important factor in migratory strategy."

Ⅲ．アウシュヴィッツ収容所から生還した著者自身の体験に基づいて書かれた以下の文章を，あなたの解釈や考えたことも含めて英訳せよ。ただし（　）の中は訳さなくてよい。　（配点 40 点）

自由という言葉は，何年ものあいだ，憧れの夢の中ですっかり手垢が付き，概念として色あせてしまっていた。そして現実に目の当たりにしたとき，霧散してしまったのだ。現実が意識の中に押し寄せるには，まだ時間がかかった。わたしたちは，現実をまだそう簡単にはつかめなかった。

（中略）

新たに手に入れた自由の中で運命から手渡された失意は，のりこえることがきわめて困難な体験であって，これを克服するのは容易なことではない。

（出典：ヴィクトール・E・フランクル『夜と霧』池田香代子訳　[みすず書房]より改変引用。）