I　次の英文を読んで，以下の設問に答えよ。(80 点)

Farming is often viewed as an old-fashioned way of life, but from an evolutionary perspective, it is a recent, unique, and comparatively bizarre way to live.(a) What's more, farming originated independently in several different locations, from Asia to the Andes, within a few thousand years of the end of the Ice Age. A first question to ask is why farming developed in so many places and in such a short span of time after millions of years of hunting and gathering.

There is no single answer to this question, but one factor might have been global climate change. The Ice Age ended 11,700 years ago, ushering in the Holocene epoch*1, which has not only been warmer than the Ice Age, but also more stable, with fewer extreme fluctuations in temperature and rainfall. During the Ice Age, hunter-gatherers sometimes attempted to cultivate plants through trial and error, but their experiments didn't take root, perhaps because they were snuffed out by extreme and rapid climate change. Experiments with cultivation had a greater chance of being successful during the Holocene, when regional rainfall and temperature patterns persisted reliably with little change from year to year and from decade to decade. Predictable, consistent weather may be helpful for hunter-gatherers, but it is essential for farmers.

A far more important factor that spurred on the origin of farming in different parts of the globe was population stress. Archaeological surveys show that campsites — places people lived — became more numerous and larger once the last major glaciation started to end around 18,000 years ago. As the polar ice caps receded and the earth began to warm, hunter-gatherers experienced a population boom. Having more children may seem a blessing, but they are also a source of great stress to hunter-gatherer communities who cannot survive at high population densities. Even when climatic conditions were relatively benevolent, feeding additional mouths would have put foragers under considerable pressure to supplement their typical gathering efforts by cultivating edible plants.

However, once begun, such cultivation set up a (b) vicious circle because the incentive to cultivate is amplified when larger families need to be fed. (1) It is not hard to imagine farming developing over many decades or centuries in much the same way that a hobby can turn into a profession. At first, growing food through casual cultivation was a supplemental activity that helped provision big families, but the combination of more offspring to feed plus benign environmental conditions increased the benefits of growing plants relative to the costs. Over generations, cultivated plants evolved into domesticated crops, and occasional gardens turned into farms. Food became more predictable.

Whatever factors tipped the scales to turn hunter-gatherers into full-time farmers, the origin of farming set in motion several major transformations wherever and whenever it occurred. Hunter-gatherers tend to be highly migratory, but incipient farmers benefit from settling down into permanent villages to tend and defend their crops, fields, and herds year-round. Pioneer farmers also domesticated certain plant species by selecting — either consciously or unconsciously — plants that were larger and more nutritious as well as easier to grow, harvest, and process. (2) Within generations, such selection transformed the plants, making them dependent on humans to reproduce. For example, the wild progenitor of corn, teosinte, has just a few, loosely held seed kernels that easily detach from the plant when ripe. As humans selected cobs with bigger, more numerous, and less detachable seeds, the corn plants became reliant on humans to remove and plant the seeds by hand. Farmers also started to domesticate certain animals, such as sheep, pigs, cattle, and chickens, primarily by selecting for qualities that made these creatures more docile. (3) 攻撃性のより低い動物は飼育される可能性が高く，そのことが，より扱いやすい子孫の誕生につながった。 Farmers also selected for other useful qualities such as rapid growth, more milk, and better tolerance to drought. In most cases, the animals became as dependent on humans as we have come to depend on them.

These processes happened somewhat differently at least seven times in

diverse places including southwestern Asia, China, Mesoamerica, the Andes, the southeastern United States, sub-Saharan Africa, and the highlands of New Guinea. The best-studied center of agricultural innovation is Southwest Asia, where nearly a century of intensive research has revealed a detailed picture of how hunter-gatherers invented farming, spurred on by a combination of climatic and ecological pressures.

The story begins at the end of the Ice Age, when Upper Paleolithic*2 foragers were flourishing along the eastern side of the Mediterranean Sea, taking advantage of the region's natural abundance of wild cereals, legumes, nuts, and fruits, plus animals such as gazelle, deer, wild goats, and sheep. One of the best-preserved sites from this period is Ohalo II, a seasonal camp at the edge of the Sea of Galilee, where at least a half dozen families of foragers, twenty to forty people, lived in makeshift huts. The site contains many seeds of wild barley and other plants that these foragers gathered, as well as the grinding stones they used to make flour, the sickles they made for cutting wild cereals, and the arrowheads they made for hunting. (4)そこに住んでいた人びとの生活は，アメリカ大陸やアフリカやオーストラリアの現代の狩猟採集民について学者たちが記録してきたものと，おそらくほとんど変わらなかっただろう。

The end of the Ice Age, however, brought much change to Ohalo II's descendants. As the Mediterranean region's climate started to warm and become wetter starting 18,000 years ago, archaeological sites become more numerous and widespread, creeping into areas now occupied by the desert. The culmination of this population boom was a period called the Natufian, dated to between 14,700 and 11,600 years ago. The early Natufian was a sort of golden era of hunting and gathering. Thanks to a benevolent climate and many natural resources, the Natufians were fabulously wealthy by the standards of most hunter-gatherers. They lived by harvesting the abundant wild cereals that naturally grow in this region, and they also hunted animals, especially gazelle. The Natufians evidently had so much to eat that they were able to settle

permanently in large villages, with as many as 100 to 150 people, building small houses with stone foundations. They also made beautiful art objects, such as bead necklaces and bracelets and carved figurines, they exchanged with distant groups for exotic shells, and they buried their dead in elaborate graves. If there ever was a Garden of Eden for hunter-gatherers, this must have been it.

But then crisis struck 12,800 years ago. All of a sudden, the world's climate deteriorated abruptly, perhaps because an enormous glacial lake in North America emptied suddenly into the Atlantic, temporarily disrupting the Gulf Stream and wreaking havoc with global weather patterns. This event, called the Younger Dryas, effectively plunged the world back into Ice Age conditions for hundreds of years. Imagine how profoundly stressful this shift was for the Natufians, who were living at high population densities in permanent villages but who still relied on hunting and gathering. Within a decade or less, their entire region became severely colder and drier, causing food supplies to dwindle. Some groups responded to this crisis by returning to a simpler, nomadic lifestyle. Other Natufians, however, evidently dug in their heels and intensified their efforts to maintain their settled way of life. In this case, (5) necessity appears to have been the mother of invention, because some of them experimented successfully with cultivation, creating the first agricultural economy somewhere in the area now encompassing Turkey, Syria, Israel, and Jordan. Within a thousand years, people had domesticated figs, barley, wheat, chickpeas, and lentils, and their culture changed enough to warrant a new name, the Pre-Pottery Neolithic A (PPNA). These farming pioneers lived in large settlements that were sometimes as large as 30,000 square meters (about 7.4 acres, roughly the size of one and a half blocks in New York City), with mud brick houses that had plaster-lined walls and floors. The oldest levels of the ancient town of Jericho (famous for its walls) had about fifty houses and supported a population of five hundred people. PPNA farmers also made elaborate ground stone tools for grinding and pounding food, created exquisite figurines, and plastered the heads

of their dead.

And the change kept on coming. At first, PPNA farmers supplemented their diet by hunting, mostly for gazelle, but within a thousand years, they had domesticated sheep, goats, pigs, and cattle. Soon thereafter, these farmers invented pottery. As these and other innovations continued to accrue, their new, Neolithic way of life flourished and expanded rapidly throughout the Middle East and into Europe, Asia, and Africa. It's almost certain you ate something today that these people first domesticated, and if your ancestors came from Europe or the Mediterranean, there's a good chance you have some of their genes.

Farming also evolved in other parts of the world following the end of the Ice Age, but the circumstances were different in each region. In East Asia, rice and millet were first domesticated in the Yangtze and Yellow River valleys about 9,000 years ago. Asian farming, however, began more than 10,000 years after hunter-gatherers started to make pottery, an invention that helped these foragers boil and store food. In Mesoamerica, squash plants were first domesticated about 10,000 years ago, and then corn (maize) was domesticated around 6,500 years ago. As farming took hold gradually in Mexico, farmers began to domesticate other plants, such as beans and tomatoes. Maize agriculture spread slowly and inexorably throughout the New World. Other centers of agricultural invention in the New World are in the Andes, where potatoes were domesticated more than 7,000 years ago, and the southeastern United States, where seed plants were domesticated by 5,000 years ago. In Africa, cereals such as pearl millet, African rice, and sorghum were domesticated south of the Sahara starting about 6,500 years ago. Finally, it seems likely that yams and taro (a starchy root) were first domesticated in highland New Guinea between 10,000 and 6,500 years ago.

Just as cultivated crops took the place of gathered plants, domesticated animals took the place of hunted ones. One hotspot of domestication was Southwest Asia. Sheep and goats were first domesticated in the Middle East

about 10,500 years ago, cattle were domesticated in the Indus River valley around 10,600 years ago, and pigs were domesticated from wild boar independently in Europe and Asia between 10,000 and 9,000 years ago. Other animals were domesticated more recently around the globe, among them llamas in the Andes about 5,000 years ago and chickens in southern Asia about 8,000 years ago. Man's best friend, the dog, was actually the first domesticated species. We bred dogs from wolves more than 12,000 years ago, but there is much debate over when, where, and how this domestication occurred (and to what extent dogs actually domesticated us).

*1 the Holocene epoch　完新世(地質年代区分のひとつ)

*2 Upper Paleolithic　後期旧石器時代の

[Adapted from Daniel Lieberman, *The Story of the Human Body: Evolution, Health, and Disease*. London: Penguin, 2013, 182－86.]

I－1. 下線部(1)を日本語に訳せ。

I－2. 下線部(2)を日本語に訳せ。

I－3. 下線部(3)を英語に訳せ。

I－4. 下線部(4)を英語に訳せ。

I－5. ナトゥフ人(Natufians)の場合，下線部(5)は具体的にどのようなことを指しているか，80字以内の日本語で説明せよ。

"The Story of the Human Body: Evolution, Health, and Disease" by Daniel Lieberman.
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I-6. 以下の(1)から(3)の答としてもっとも適切なものをAからEの中から選び，記号で答えよ。

(1) Look at the underlined part (a). According to the text, why might farming be considered a "comparatively bizarre way to live"?

A. Farmers are at greater risk of dying from starvation than hunter-gatherers because they lose their capacity to hunt expertly.

B. Farmers rely on a limited variety of plants compared to hunter-gatherers, thereby reducing their sources of vitamins and minerals.

C. Farming depends on weather and temperature patterns being stable from year to year, a condition that was not the case for much of human history.

D. Farming is more labor-intensive than hunting and gathering, demanding that everyone, including children, work harder to produce a meal.

E. Settled farming communities are likely to be attacked by nomadic groups who travel lightly and are skilled at using weapons.

(2) Look at the underlined part (b). Choose the statement that best describes the "vicious circle".

A. Bigger families and tribes had to break up into smaller groups to search for food and survive.

B. Cold weather caused bands of humans to concentrate in warmer areas, placing stress on the ecosystem.

C. Competition for limited food resources resulted in battles that reduced the human population.

D. Increasing numbers of human beings swiftly decreased the numbers of wild animals they hunted.

E. More secure food sources supported a larger population, which in turn required more food.

(3) Choose the statement that describes how Pre-Pottery Neolithic A people were culturally similar to early Natufians, according to the text.

A. They drilled holes in objects to make beads which they wore around their necks and wrists.

B. They kept extra food in storage houses for use in winter and times of natural disaster or famine.

C. They left behind primitive symbols that may have been the earliest forms of written language.

D. They painted lively scenes of hunting animals and harvesting plants on the walls of nearby caves.

E. They treated the bodies of their ancestors as special in the ways they took care of them after death.

I－7. 次の1から10の文から，本文の内容に一致するものを3つ選び，番号で答えよ。

1. Some food preparation techniques of prehistoric people include smashing, cooking in hot water, and preserving with salt or by drying in the sun, wind or smoke.
2. Tribes who camped at Ohalo Ⅱ used sharp tools to fish from the Sea of Galilee and to hunt wild animals.
3. Archaeological sites indicate that land near the Mediterranean Sea is drier now than it was for many centuries following the start of climate changes 18, 000 years ago.
4. Natufians were known throughout the Middle East primarily as traders of precious works of art.
5. Natufians and Pre-Pottery Neolithic A people can be distinguished from typical hunter-gatherers by the solidity and lasting nature of their accommodations.
6. The Pre-Pottery Neolithic A town of Jericho supported about ten times as many people as a Natufian village and about twenty times as many people as an Ohalo Ⅱ campsite.
7. Over time and geography in human history, as a rule, pottery was invented after a society became predominantly agricultural.
8. Inhabitants of the Americas were the first to cultivate corn, tomatoes, beans, nuts, and yams successfully.
9. Knowledge about how to domesticate animals such as pigs, sheep, and chickens traveled along trade routes between Europe and Asia.
10. Although there is no agreement on the exact date, it is believed that humans began to breed dogs some time before farming became widespread.

Ⅱ　次の英文を読んで，以下の設問に答えよ。(70 点)

Literacy involves three skills, not two: reading, writing — and spelling. Traditionally, just the first two skills were recognised — and this emphasis is still with us. The typical dictionary definition states that literacy is the 'ability to read and write'. No mention of spelling.

Spelling needs to be given separate acknowledgement, as it is a unique skill. It is different from reading. In reading, someone else has done all the work, writing the words down. It is possible to read by attending selectively to the cues in a text, recognising a few letters and guessing the rest. It isn't possible to spell in this way: spellers have to identify *all* the letters. Also, more things can go wrong while spelling. (1)ひとつの文字に対する発音の数よりも，ひとつの音に対するつづりの数のほうがはるかに多い。 There is really only one way to say the letter sequence *deep*, but there are several ways of writing the sound sequence /di:p/, such as *deep*, *depe* and *deap*.

Spelling is also different from writing. We see this clearly in spelling bees[*1] and other competitions. It is not just a matter of knowing the names of the letters and speaking them aloud; the speller must also hold the letter sequence of the whole word in mind while naming the letters in the correct order. This is where competitors often make an error. They know the spelling all right, but something goes wrong in the speaking of it, and the right letters come out in the wrong order. We might call this the 'Pooh effect', after A. A. Milne's character, who complained: 'My spelling is Wobbly. It's good spelling but it Wobbles, and the letters get in the wrong places' (*Winnie-the-Pooh*).

Spelling also lacks the automaticity we associate with handwriting or typing. (2)Whether we are spelling the words correctly or not, our hand/fingers can often perform the task without the brain paying any special attention. The clearest case is when we write our signature. We do it in a single action, and do not think out the name 'letter by letter'. This 'memory in the hand' can be seen at

work in other situations. I once asked a concert pianist how he remembered all the pieces he played, and he replied 'the memory is in the fingers'. This is analogous to the letter sequences which are so frequent and familiar that our writing hand or fingers produce them automatically, often — in such cases as *and* and *the*, or the endings *-tion* and *-ing* — running the letters together in the process and ignoring such details as crossing a *t* or putting a dot over an *i*.

Spelling is neither reading nor writing. It is a separate skill, and it needs individual attention. A concern to achieve 'true orthography'[*2] in writing developed during the 16th century, but the general assumption was that, once a child had learned to read, the ability to spell would automatically follow. In 1582, Richard Mulcaster commented in his *Elementarie*: 'the direction of his hand, whereby he learns to write, shall be answerable to his reading'. The view lasted a long time. In 1750, Lord Chesterfield remarked, in one of his letters to his son (19 November), 'Reading with care will secure everybody from false spelling.'

But attitudes were changing during the 18th century, as notions of correctness evolved and dictionaries became authorities. Spelling became a primary criterion of educatedness, too important to be left to chance: [①]. As a result, the formal teaching of spelling through letter-naming, word tables, spelling rules and word-lists of increasing complexity became routine. We enter a classroom era when rule jingles were recited in unison, errors were corrected by repeated copying ('Write out 100 times ...'), and spellings were given as homework. Memory drills and spelling bees (a term first recorded in 1876) became regular experiences.

But by the end of the 19th century, teachers were becoming increasingly dissatisfied with this approach — as were parents. They were trying to teach rules that clearly did not work. (3) Words were being spelled in isolation, regardless of their meaning and context. The spelling lists were teaching children words they did not want to use in their writing, and were omitting words which they did want to use. The expected improvements were not taking place.

Huge amounts of time were being devoted to teaching spelling which, some educators believed, could more usefully be devoted to other things. In 1897 an American physician-turned-educator, Joseph Mayer Rice, published a study called *The Futility of the Spelling Grind.* It was one of several over the next few decades showing there was no clear relationship between the amount of time devoted to learning about spelling, using the traditional methods, and the actual achievement of spellers. There was no appreciable difference in spelling accuracy among students who had been taught by formal instruction and those who had not.

(4) During the 20th century, accordingly, the pendulum swung back towards the importance of reading. The idea resurfaced that increasing the quantity of one's reading would, more than anything else, be the simplest and best way to improve spelling. At the same time, a new emphasis emerged in relation to writing: creative content should be the priority, and should not be held back by an excessive concern to 'get the spelling right'. Some interpreted this new direction to mean that '[②]'. Cases were reported of spelling errors remaining uncorrected in schoolwork. And as complaints grew (for example, among employers) about poor standards of spelling, a return to traditional methods was advocated. The issue of spelling became controversial, and the controversy is still with us.

In my view, it is an unnecessary controversy, because the truth lies somewhere between the two extremes. Rules and lists can be helpful if they are the *right* rules and lists. The problem with the 19th-century methods was that they weren't. The lists contained large numbers of irrelevant words, and the rules were badly expressed or simply wrong. A word-list containing the words that a child actually wants to write can be very helpful, and if rules are replaced by explanations based on linguistic principles, formal teaching can be illuminating. At the same time, there is clearly huge value in getting children to read as much as possible — and I include here not only traditional books and

magazines, but text messages, web pages, blogs, social interaction sites and other online sources. Spelling is a matter of internalising letter sequences in words, and the more opportunities they have to see these sequences the better. All the evidence suggests that the more children see spellings, whether regular or irregular, in their reading, the more readily they will start to use them in their writing.

*1 spelling bees: spelling competitions

*2 true orthography: the system of correct spelling

[Adapted from David Crystal, *Spell It Out: The Singular Story of English Spelling*. London: Profile Books, 2013, 286－90.]

Ⅱ-1. 下線部(1)を英語に訳せ。

Ⅱ-2. 下線部(2)を日本語に訳せ。

Ⅱ-3. 下線部(3)を日本語に訳せ。

Ⅱ-4. 下線部(4)はどのような変化を意味しているか。この揺り戻しが起きた理由を含めて 70 字以内の日本語で説明せよ。

"Spell It Out: The Singular Story of English Spelling" by David Crystal.
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Ⅱ-5. 文中の空欄[①], [②]に入れるのにもっとも適切な語句をそれぞれAからEの中から選び，記号で答えよ。

① A. it had to be 'accepted', not 'corrected'
B. it had to be 'improved', not 'approved'
C. it had to be 'managed', not 'evolved'
D. it had to be 'taught', not 'caught'
E. it had to be 'thought', not 'brought'

② A. creativity should not be emphasised
B. spelling was unimportant
C. students should follow traditional methods
D. teachers should correct errors in spelling
E. there was no standard spelling

Ⅱ-6. 以下の(1)と(2)の答としてもっとも適切なものをAからEの中から選び，記号で答えよ。

(1) Choose the statement that best describes Joseph Mayer Rice's study on spelling.

A. A connection between the use of traditional methods and the preciseness of the speller could not be observed.

B. Bad spellers could improve their performance by memorising word-lists and concentrating on the task.

C. Children could become better spellers by applying a set of new rules as introduced in his book.

D. The amount of spelling homework assigned to children was directly related to how well they could spell.

E. There was no link between the accuracy of spellers and the age they began their formal education.

(2) Choose the statement that best summarises the author's view on spelling.

A. Piano playing and spelling are similar in that they require the skills of concentration and memorisation of sequences.

B. Pronouncing words and writing them out numerous times are key to identifying letters in words and developing the ability to spell correctly.

C. Spelling involves reading a variety of materials to internalise letter sequences, as well as learning relevant word-lists and proper rules.

D. The controversy over spelling is unnecessary because the 16th-century notion that reading and creative writing will prevent poor spelling was later proven to be correct.

E. The 19th-century method called for ineffective strategies such as providing word-lists in context, thereby demonstrating the relationship between improved spelling and the traditional methods.

Ⅱ-7. 次の1から8の文から，本文の内容に一致するものを2つ選び，番号で答えよ。

1. The dictionary defines 'spelling' as a unique skill separate from reading and writing.
2. There can be only three ways to write the sound sequence /di:p/: *deep*, *depe*, and *deap*.
3. In a spelling bee, a competitor who remembers the correct spellings is sure to win.
4. A. A. Milne was an advocate for teaching correct spelling by formal instruction.
5. Children are able to learn spelling more quickly if they are presented in class with words and rules they want to use.
6. Richard Mulcaster and Lord Chesterfield were alike in emphasising the importance of reading in improving the ability to spell.
7. With the rise of dictionaries in the 18th century, spelling began to be taught systematically, and children were told to memorise complex rules and tables.
8. In the 20th century, parents raised their voices to complain about creative writing being taught at school.