

英 語 問 題

はじめに、これを読みなさい。

1. この問題用紙は 14 ページある。ただし、ページ番号のない白紙はページ数に含まない。
2. 解答用紙に印刷されている受験番号が正しいかどうか、受験票と照合して確認すること。
3. 監督者の指示にしたがい、解答用紙の氏名欄に氏名を記入すること。
4. 解答は、すべて解答用紙の所定欄にマークするか、または記入すること。所定欄以外のところには何も記入しないこと。
5. 問題に指定された数より多くマークしないこと。
6. 解答は、必ず鉛筆またはシャープペンシル(いずれもHB・黒)で記入のこと。
7. 訂正する場合は、消しゴムできれいに消し、消しくずを残さないこと。
8. 解答用紙は、絶対に汚したり折り曲げたりしないこと。
9. 解答用紙はすべて回収する。持ち帰らず、必ず提出すること。ただし、この問題用紙は、必ず持ち帰ること。
10. 試験時間は 70 分である。
11. マークの記入例

良い例	悪い例
	  

I 次の文章を読んで、以下の間に答えなさい。（*の付いた語句については、文末に注があります。）

Astronomers have been struggling for nearly 80 years to figure out what makes up the mysterious dark matter* that pervades the universe. They came up with the idea of it to explain why, judging from the motions of galaxies, the universe seems to have so much more mass than the visible stars and galaxies can account for. They strongly suspect it's some sort of exotic subatomic particle*, created in the Big Bang in mind-blowing quantities and not visible by any means except by the pull exerted by its gravity. The particle notion is still mostly theoretical; astronomers have not yet discovered one of these particles directly.

But a new set of observations by the Hubble Space Telescope and by the Very Large Telescope, based in Chile, may have just come up with a crucial clue about what the dark matter actually is. A new paper appearing in *Monthly Notices of the Royal Astronomical Society* argues that dark matter particles within a galaxy cluster* known as Abell 3827, about 1.4 billion light-years from Earth, are responding to a force other than gravity.

What the paper's authors actually found out was an unusual arrangement of dark matter. Normally, dark matter forms a huge halo* around a galaxy. Our own Milky Way's* halo is part of what keeps us together: The galaxy is spinning so fast it would fly apart without the extra gravity of dark matter to hold it together. For one of the galaxies in this cluster, the center point of the dark-matter halo is offset* by about 5,000 light-years from the center point of the galaxy itself.

In space, that's not very far. But it should be zero if dark-matter particles are subject to gravity alone, as some theories suggest.

But other theories predict that another force should be involved. For at least a couple of decades now, theorists have leaned toward something called "weakly interacting massive particles" (WIMPs), as the best explanation for what dark matter is made of. Such particles would feel not just gravity, but another, relatively

weak force — something similar to the so-called weak nuclear force.

This could be the first experimental evidence that dark matter is indeed made of WIMPs. The best explanation for the dark-matter cloud's offset, says Richard Massey, lead author of the paper, is that it's passing through other dark-matter clouds in the core of Abell 3827. Friction between the clouds, caused by this extra force, is forcing the one Massey observed to lag behind* its galaxy — although Massey and his colleagues have no idea yet what the force is. An extra force besides gravity wouldn't make dark matter less dark in the sense of being easier to see directly, but rather in the sense of casting some light on its nature.

They're also open to the possibility that something much more mundane* is going on. A burst of star formation on one side of the visible galaxy, for example, could create a bright spot that could skew* the astronomers' estimate of where the galaxy's center is. Or perhaps the gravity of nearby galaxies might be distorting the visible galaxy's shape, again making its center hard to pinpoint. "It's tough to think of a convincing alternative explanation," Massey says, "but this is such an exciting discovery that I'm being extra super cautious rather than shouting from the rooftops."

The idea that dark-matter particles are slowing each other down through some unknown force "does seem like the most likely explanation at this point," says Jason Rhodes, a dark-matter expert at NASA's Jet Propulsion Laboratory*. "But we clearly need more evidence." The search for that evidence is already under way, with a set of new observations of other galaxies planned.

Even if more examples of offset dark matter are eventually found, it won't necessarily nail down the nature of the particles in question. Even if they do feel some force in addition to gravity, it will be hard to calculate the strength of that force, and thus to narrow down the candidate list of possible particles even further.

Ideally, particle physicists at Europe's Large Hadron Collider, the world's biggest particle accelerator*, will manufacture some dark-matter particles here on Earth, where their properties will be easier to measure. Or maybe one of several

underground detectors, designed to snag* a particle as it passes through the Earth, will let us know with an electronic signal.

One way or another, physicists and their astronomical brothers are convinced that the mystery of dark matter can't remain dark forever.

出典：“Dark Matter May Be Less Mysterious Than We Thought”

<http://news.nationalgeographic.com/2015/04/150415-dark-matter-galaxy-space-science-gravity/> (一部変更・省略しました。)

注 dark matter : 暗黒物質(銀河内や銀河間に存在し、光を発しないため、その正体がまだ不明な仮説上の物質。天体に重力を及ぼしていると言われている。)

exotic subatomic particle : まだ確認されていない形態をした原子以下のサイズの粒子

galaxy cluster : 銀河団 halo : ハロー(星などから成る円盤状の光)

our own Milky Way : 我々の住む銀河系

offset : 中心からずれて(いること)

force A to lag behind B : Bに対してAの遅れを生じさせる

mundane : ありふれた skew : ゆがめる

NASA's Jet Propulsion Laboratory : アメリカ航空宇宙局ジェット推進研究所

particle accelerator : 粒子加速器 snag : 捕まえる

(問 1) 下線部(ア)(ウ)(オ)(ク)の内容に最も近いものをそれぞれ1つ選び、その番号を解答欄にマークしなさい。

(ア) pervades

1. absorbs
2. explains
3. fills
4. introduces

(ウ) arrangement

1. appearance
2. color
3. distribution
4. temperature

(オ) feel

1. destroy the effects of
2. examine by touching
3. have an impression of
4. react to

(ク) nail down

1. change
2. determine
3. disturb
4. preserve

(問 2) 下線部(エ)(カ)(キ)の内容に最も近いものをそれぞれ1つ選び、その番号を解答欄にマークしなさい。

(エ) it

1. the center point of the dark-matter halo
2. the cluster of WIMPs
3. the distance between the two center points
4. the mass of dark matter

(カ) less dark

1. heavier
2. more distant
3. more perceptible
4. smaller

(キ) shouting from the rooftops

1. announcing the discovery
2. considering the matter very seriously
3. looking up at the stars
4. warning the world

(問 3) 下線部(イ)を以下のように言い換えるとき、空欄(A)(B)に入れるのに最も適切な語をそれぞれ1つ選び、その番号を解答欄にマークしなさい。

(イ) not visible by any means except by the pull exerted by its gravity

→ (A) by the attracting force (B) by its gravity

- (A) 1. clearly viewable 2. completely invisible
3. hardly acceptable 4. noticeable only
- (B) 1. cancelled 2. caused 3. confused 4. wasted

(問 4) 本文の内容に基づいて、(A)~(F)の質問の答として最も適切なものをそれぞれ1つ選び、その番号を解答欄にマークしなさい。

(A) What makes the astronomers think that the universe seems to have more mass than the visible stars and galaxies can account for?

1. They came up with an idea that the Big Bang created it.
2. They observed the motions of galaxies and judged from them.
3. They were not able to explain why galaxies expand.
4. The particle notion is mostly theoretical.

- (B) What would happen if it were not for the dark matter?
1. Astronomers would lose their jobs.
 2. Galaxies would come apart.
 3. Scientists would not be able to explain the Big Bang.
 4. The universe would be brighter.
- (C) Which could be the first evidence that dark matter is made of WIMPs?
1. The Big Bang.
 2. The dark matter cloud's offset.
 3. The Hubble Space Telescope.
 4. The huge halo.
- (D) What does Massey think about his new theory?
1. He does not have confidence in it.
 2. It is just one of many other explanations.
 3. It is necessary to announce it as soon as possible.
 4. It is the best that scientists have come up with.
- (E) What does Jason Rhodes think about dark matter?
1. He is holding back his own judgment.
 2. He is suspicious about its existence.
 3. He shares the same opinion with Massey.
 4. His idea is very different from Massey's.

(F) What would happen if particle physicists at Europe's Large Hadron Collider could produce dark-matter particles on Earth?

1. Electronic signals to outer space could be sent more effectively.
2. Scientists could strengthen the force brought by something other than gravity.
3. The Hubble Space Telescope would not be necessary any more.
4. The properties of dark-matter particles could be observed more easily.

II 次の文章を読んで、以下の間に答えなさい。（*の付いた語句については、文末に注があります。）

“No man is an island, entire of itself; every man is a piece of the continent, a part of the main,” wrote the poet John Donne in the 17th Century.

Some people seek isolation, but few choose to be lonely. Loneliness not only makes us unhappy, but it is bad for us. It can lead to a lack of confidence and mental health problems like depression, stress and anxiety. A report by the Mental Health Foundation suggests loneliness among young people is increasing; at the same time, social changes such as the rise of the solo dweller, combined with an aging population, are changing the way people interact with each other.

So is modern life making us lonely? People feel lonely for different reasons, says Michelle Mitchell, charity director general of Age UK*, but it tends to be triggered by a big life event. “It can be poor health, illness, money, children moving away, feeling cut off from family or community, a lack of access to transport, redundancy* or career problems or divorce. Often it’s when people lose a sense of purpose and contribution.”

“Bereavement* is also a big issue — losing your husband or wife can have a really detrimental* impact on how people feel about the world,” Mitchell says. It is a feeling that Pam, whose husband died four years ago, identifies with. “You meet other men, who are on their own. That’s not what I am looking for. What am I looking for? I’m looking for my husband, aren’t I, and I’m never going to find him,” she says.

But while bereavement may be inevitable, there’s a sense modern society is exacerbating* other triggers of loneliness. Dr. Andrew McCulloch, chief executive of the Mental Health Foundation, argues that although there is no hard historic data to show loneliness — which is arguably subjective — is getting worse, there is some sociological evidence. “We have data that suggests people’s social networks have got smaller and families are not providing the same level of social context they may have done 50 years ago. It’s not because they are bad or uncaring families,

but it's to do with geographical distance, marriage breakdown, multiple caring responsibilities and longer working hours," he says. ⁽⁷⁾

But if modern society is making us more lonely, what can be done to counter it? Mitchell says there needs to be more investment in social help such as befriending schemes—which relies on volunteers—and community outreach* programs, as being part of a social network such as a walking club or local church can help alleviate* loneliness. She says we also have a responsibility to “think more openly and creatively about how to deal with one of the greatest social problems of our time” ⁽⁸⁾.

McCulloch agrees innovation* is key. “Instead of living alone, people could club together to buy houses—a friend is doing that in his old age, it's a mini commercial enterprise,” he says. But he says there needs to be a cultural shift so that people are more concerned about the welfare of those in their communities. ⁽⁹⁾ “Just a basic level of social behavior, such as saying hello, or asking if people are OK, can have an impact,” he says.

Mitchell believes a tipping point* is around the corner. “I think we'll look back and think ‘how did we allow that to happen?’ It's like looking back at the issue of children going to work at 12 years of age—there's something so fundamentally wrong with what's happening,” she says.

出典：Vanessa Barford, “Is modern life making us lonely?” (*BBC News Magazine*, April 8, 2013) (一部変更・省略しました。)

注 charity director general of Age UK : Age UK(高齢者のための慈善団体名)の会長

redundancy : 余剰人員の解雇, 「リストラ」

bereavement : (親しい者に)先立たれること detrimental : 有害な

exacerbate : 悪化させる outreach : 福祉を広めるための

alleviate : 軽減する innovation : 一新すること

tipping point : 小さな積み重ねがある時点から大きな流れとなる, その転換点

(問 1) 下線部(ア)(イ)(ウ)の内容に最も近いものをそれぞれ1つ選び、その番号を解答欄にマークしなさい。

(ア) few choose to be lonely

1. it is hard to get rid of noisy neighbors
2. lots of people are forced to live close together
3. no one can tell where loneliness comes from
4. there are not many who prefer loneliness

(イ) when people lose a sense of purpose and contribution

1. when one does not know what to do for oneself or for others
2. when society is disturbed by natural disasters
3. when there is a deep mistrust of government among people
4. when you come to think of your own future

(ウ) multiple caring responsibilities

1. responsibilities to decide whether or not to give aged patients prolonged medical treatment
2. responsibilities to earn a living as well as take care of the housework
3. responsibilities to look after more than one person at the same time
4. responsibilities to take account of various conditions of local residents

(問 2) 下線部(エ)の内容を表す1語を本文から抜き出し、記述解答欄に記入しなさい。

(問 3) 下線部(オ)を以下のように言い換えるとき、空欄に入れるのに最も適切なものを1つ選び、その番号を解答欄にマークしなさい。

(オ) there needs to be a cultural shift so that people are more concerned about the welfare of those in their communities

→ there needs to be a cultural shift which will ()

1. allow people to live more independently from each other in an ever wealthier society
2. encourage people think more about their neighbors' health, safety and happiness
3. make people raise more money to support the sick and the aged
4. remind people of the importance of the politeness and diligence of the old days

(問 4) 以下の(A)~(C)について、本文の内容に最も近いものをそれぞれ1つ選び、その番号を解答欄にマークしなさい。

- (A)
1. The aging population has given rise to a generation with enough skills to live independently.
 2. The number of people living alone is increasing in the city, but not in the suburban areas.
 3. The report by the Mental Health Foundation says loneliness among young people causes changes in the way people interact with each other.
 4. What John Donne means is that none of us can live totally isolated from the rest of the world.

- (B)
1. Mitchell holds Pam as a fine example of a person overcoming loneliness caused by bereavement.
 2. Pam cannot have the same view of the world as she had before her husband died four year ago.
 3. Pam is eagerly looking for a future husband, but there are so many candidates that she just cannot choose one.
 4. Pam is tired of taking care of her husband and hopes someday he will be able to look after himself.
- (C)
1. According to McCulloch, people today are less affectionate towards their family members than they were 50 years ago.
 2. McCulloch argues that we need more investment in order to promote various commercial enterprises.
 3. McCulloch doubts that small deeds such as saying hello to neighbors have any meaning in our modern society.
 4. McCulloch insists on the importance of innovating today's social networks so that people can get closer.

Ⅲ 次の文章を読んで、以下の問に答えなさい。（*の付いた語句については、文末に注があります。）

I was eight years old. At that moment in my life, nothing was more important to me than baseball. My team was the New York Giants, and my hero, above all, was Willie Mays, the incandescent* Say Hey Kid.

That spring, I was taken to my first big-league game. After the game was over, my parents and their friends sat talking in their seats until all other spectators had left. It got so late that we had to walk across the diamond and leave by the center-field exit, which was the only one still open. As it happened, that exit was right below the players' locker rooms.

(A)

(B)

(C)

I didn't want to cry, but tears started falling down my cheeks, and there was nothing I could do to stop them. I wasn't a baby. I was eight years old, and big kids weren't supposed to cry over things like that.

(D)

If nothing else, the years taught me this: if there's a pencil in your pocket, there's a good chance that one day you'll feel tempted to start using it.

As I like to tell my children, that's how I became a writer.

出典 : Paul Auster, *Red Notebook* (一部変更・省略しました。)

注 incandescent : 白熱した, 輝ける

(問 1) 本文中の空欄(A)~(D)に入れるのに最も適切なものをそれぞれ1つ選び、その番号を解答欄にマークしなさい。(同じ番号を2度以上マークした場合は解答が無効になります。)

1. After that night, I started carrying a pencil with me wherever I went. It became a habit of mine never to leave the house without making sure I had a pencil in my pocket. I had been caught empty-handed once, and I wasn't about to let it happen again.

2. "Sure, kid, sure," he said. "You got a pencil?" He was so full of life, I remember, so full of youthful energy, that he kept bouncing up and down as he spoke.

I didn't have a pencil, so asked my father if I could borrow his. He didn't have one either. Nor did my mother. Nor, as it turned out, did any of the other grown-ups.

3. Just as we approached the wall, I caught sight of Willie Mays. It was Willie Mays, not ten feet away from me. I managed to keep my legs moving in his direction, and then forced some words out of my mouth. "Mr. Mays," I said, "could I please have your autograph?"

4. The great Willie Mays stood there watching in silence. When it became clear that no one in the group had anything to write with, he turned to me and shrugged. "Sorry, kid," he said. "Ain't got no pencil, can't give no autograph.*" And then he walked out of the ballpark into the night.

注 "Ain't got no pencil, can't give no autograph." 「鉛筆がないんじゃ、サインできないな。」

(問 2) 本文中の下線部を、itの指す内容を明らかにして日本語に訳しなさい。