

一般科目

# 英語

## 注意事項

- 1 試験開始の合図があるまで、この問題用紙を開いてはいけません。
- 2 問題用紙は4ページで、解答用紙は2ページあります。試験開始の合図があつてから確かめなさい。
- 3 監督者の指示に従い、解答用紙の各ページに受験番号を記入しなさい。氏名を書いてはいけません。
- 4 文字などの印刷に不鮮明なところがあつた場合は、手を挙げて監督者に知らせなさい。
- 5 解答はすべて解答用紙に記入しなさい。ただし、「総得点欄」「採点欄」「得点欄」に記入してはいけません。
- 6 問題用紙の余白は下書きとして利用してかまいません。
- 7 試験終了後、配付された問題用紙は持ち帰りなさい。

# 問題用紙

( 英語 )

問題 1 次の英文は地球に関する記述です。下線部(1)から(5)について、文脈に適合するように、[ ]内の要素を並べ替え、記号を用いて答えなさい。

Example:

All of us can see [(a)nectar (b)bees (c)to gather (d)flying] in the garden.

Answer: All of us can see [( b ) - ( d ) - ( c ) - ( a )] in the garden.

All of us can see [bees flying to gather nectar] in the garden.

Earth is shaped like a slightly squashed sphere, sort of like a rubber gym ball squeezed a bit between your hands. As a result, (1)[(a)longer (b)is (c)around (d)the equator (e)Earth] than it is around the poles. It's stretched slightly because of its rotation, much like a flying, spinning ball of dough stretches out to form a pizza crust.

The earth's movements and iron core give it a magnetic field. A compass is simply (2)[(a)points (b)toward (c)a (d)that (e)magnet] the earth's magnetic north, which is actually not under the geographic North Pole! Magnetic north changes a bit every year as the earth's magnetic field wanders around.

Earth spins around an imaginary vertical line that runs from the North Pole to the South Pole, a motion called rotation. The earth completes one rotation, or one complete turn, about every twenty-four hours. This rotation (3)[(a)to (b)makes (c)the sun (d)move (e)appear] across the sky.

As Earth rotates, it also revolves around the sun, which means it moves in a circle around the sun. Earth makes one revolution, or one full circle around the sun, every 365.25 days. Our calendar year (4)[(a)revolution (b)based (c)is (d)on (e)the earth's]. The path Earth takes around the sun is called an orbit. The earth's orbit is actually shaped like an ellipse, which is an elongated circle, like an oval. This means that Earth is not the same distance from the sun year-round.

Earth is also at a tilt. The earth's axis is tilted 23.44 degrees from the line perpendicular to its orbit. Because of the earth's tilt, light (5)[(a)the (b)of (c)Earth (d)strikes (e)surface] at different angles at different stages of its orbit.

(adapted from *Everything You Need to Ace Science in One Big Fat Notebook*)

注 squashed: 押しつぶされた      dough: パン生地      North Pole: 北極(点)      South Pole: 南極(点)  
ellipse: 長円、楕円(形)      perpendicular: 垂直の

# 問題用紙

( 英語 )

問題2 次の英文はある実験に関する説明です。下線部(1)から(5)に入れるのに最も適切な文を下の(a)から(e)の中から一つずつ選び、その記号で答えなさい。

In 2005, researcher Amir Raz tested hypnosis. He used a famous test called the Stroop test and a machine that takes scans of brain activity. The Stroop test is a complicated test. ( 1 ). However, the name is written in a different color. For example, the word may be “blue” but it is written in the color red. The person must say what the color of the letters is, not what the word says. So for this example, the person must say “red,” because the color of the letters is red.

The Stroop test is difficult to do because part of the brain sees the color, but another part reads the word. ( 2 ). To do this, we use a part of the brain called the anterior cingulate cortex. However, Raz found that, after 25 minutes of hypnosis, highly susceptible people were able to perform better on the test. ( 3 ). They were hoping that the hypnotic suggestion would stop the disagreement inside the brain. Brain scans showed that they were successful. In the people susceptible to hypnosis, the anterior cingulate cortex showed much less activity.

Despite questions about it, hypnosis is very big business. There is hypnosis for almost everything. ( 4 ). Business people try hypnosis to help them improve their work or make more money. Artists have used hypnosis to create new and interesting kinds of art.

( 5 ). In one famous case in 1978, a man had attacked and killed several women in the state of Florida. A few people saw the man, but only briefly. With a trained hypnotist, the people were able to remember more details about the man and even choose his picture out of a collection of photos. Before long, the man was caught and proven guilty of the crimes.

(adapted from *The Placebo Effect: The Power of Positive Thinking*)

注 hypnosis: 催眠術      anterior cingulate cortex: 前帯状皮質      susceptible: (暗示に)かかりやすい

- (a) Hypnosis has even been used to solve crimes
- (b) A person is shown the name of a color
- (c) People use it to help them break bad habits, like smoking or biting their fingernails, or to help them do better in sports
- (d) This creates a disagreement, and the brain must work to decide which answer is correct
- (e) During the hypnosis, the researchers suggested that the letters of the words had no meaning

# 問題用紙

( 英語 )

問題3 次の技術輸出入に関するデータに基づいて、下の英文の下線部(1)から(8)に最も適切な語を記入し、英文を完成させなさい。

## Technology exports and imports

(unit: US \$1 million)

Countries	Technology exports			Technology imports		
	2005	2010	2015	2005	2010	2015
Australia	2,654.5	4,577.3	4,427.9	3,359.4	7,299.8	7,799.6
Canada	2,652.3	3,000.5	2,620.9	1,207.3	565.9	1,227.4
Hungary	1,625.9	4,185.5	4,178.6	2,476.4	3,812.2	3,817.1
Ireland	21,519.2	40,878.4	73,337.0	24,778.6	44,576.2	98,091.4
Japan	18,402.5	27,758.5	32,631.4	6,384.7	6,038.6	4,978.7
Luxembourg	1,036.8	2,363.3	4,968.8	876.4	2,180.4	6,004.4

(adapted from *International Statistical Compendium 2020*)

The table above shows the total value of technology exports and imports of several countries for the years 2005, 2010, and 2015. Figures represent units of one million US dollars.

With respect to exports, all six of the countries listed saw an increase between 2005 and 2010, with two of those countries—( 1 ) and Luxembourg—more than doubling their technology exports in that time. In addition, while the exports of some countries decreased from 2010 to 2015, almost all of the countries increased their exports overall between 2005 and 2015: only ( 2 ) had less export value in 2015 than in 2005. Although two countries had significantly higher exports than the others, the remaining four countries varied significantly in their rates of increase and decrease between 2005 and 2015: while ( 3 ) had the lowest technology export value in 2005, by 2015 this was no longer the case.

Turning our attention to imports, almost every country listed saw its figures rise between 2005 and 2015. In fact, those numbers more than tripled in two countries—Luxembourg and ( 4 ). In just the five-year period between 2005 and 2010, Luxembourg and ( 5 ) both more than doubled their import values. Only ( 6 ) recorded lower import value in 2015 than in 2005.

Overall, Ireland and ( 7 ) were the only countries on the list to see their export and import figures both rise steadily from 2005 to 2015. ( 8 ) had the highest figures for each year in both categories.

# 問題用紙

( 英語 )

問題 4 次の英文はある物質にまつわる出来事です。この英文を読み、下の問いに答えなさい。

The chemical substance called ethylene glycol is also known as “antifreeze” because when put into car radiators it stops the water (ア) freezing in very cold conditions. Ethylene glycol is about 1.3 times sweeter than table sugar.

Not very long ago, a young Melbourne man who was about to leave on a snow trip put a bowl of antifreeze on the ground, ready to be put in the car radiator. Unfortunately, his dog, Ayres, saw the opportunity and gulped it down. The young man called an emergency veterinary hospital for advice. Imagine his astonishment when the vets told him that the only way that he could save his dog’s life was to get him to the hospital immediately so that they could put him on a vodka drip!

Why vodka? Ethylene glycol is another member of the alcohol family of substances. It would normally go to the dog’s liver, which breaks down alcohols, and poison (イ) it. However, when alcohol from vodka and ethylene glycol are both in the bloodstream, the liver will only process the “normal” alcohol. This allows the kidneys to filter out the ethylene glycol, which then passes harmlessly out of the dog’s body in his urine. Ayres was monitored using ultraviolet (UV) light to show when all the ethylene glycol had been passed in the urine. Ethylene glycol looks green under UV light. When Ayres’ urine (ウ) longer looked green, the doctors knew that all the ethylene glycol must have been flushed out of him by the vodka. The outcome for the owner was a very drunk and happy dog, no snow trip, and a \$550 bill!

Humans have also been known to drink things by mistake. About 30 years ago, some very bad science led to the accidental discovery of a new sweet molecule. Luckily, (エ) the person was not harmed. A student at a British university misheard the instruction to “test the compound” and thought he had been told to “taste the compound.” Good scientists *never* taste anything in their laboratories!

The substance that the student (エ) was very sweet. A patent was taken out that very day for a new artificial sweetener. An artificial sweetener is a sweet-tasting substance that has been manufactured by humans. (オ) Some people have made a big profit by making artificial sweeteners that taste like sugar but don’t make us put on weight. However, these compounds must be strictly tested to ensure that they do not (カ) health problems.

(adapted from *Science Edge 2*)

注 ethylene glycol: エチレングリコール    antifreeze: 不凍剤(液)    radiator: 冷却装置    gulp: ぐっと飲む  
veterinary: 獣医の    vet: 獣医    vodka drip: ウォッカの点滴    urine: 尿    mishear: 聞き違える  
artificial sweetener: 人工甘味料

問 1 (ア)から(カ)について、それぞれ文構成上最も適切な語を以下の(a)から(d)の中から選び、その記号で答えなさい。

- |     |            |            |            |            |
|-----|------------|------------|------------|------------|
| (ア) | (a) from   | (b) for    | (c) into   | (d) with   |
| (イ) | (a) any    | (b) more   | (c) not    | (d) no     |
| (ウ) | (a) passed | (b) harmed | (c) tested | (d) tasted |
| (エ) | (a) occur  | (b) cause  | (c) rise   | (d) result |

問 2 下線部(1)の it は何を指すか。本文中からそのまま抜き出さなさい。

問 3 下線部(2)の the person は誰を指すか。本文中からそのまま抜き出さなさい。

問 4 下線部(3)を日本語に訳しなさい。