

1. 次の英文を読み、それに続く設問 A-1 から A-5 までに答えなさい。解答は、それぞれの設問に続く選択肢 1 から 3 までの中から、答えとして最も適切なもの一つずつ選び、その番号のマーク欄を塗りつぶしなさい。

Cattle seem to know how to find north and south. This is the conclusion of researchers who studied photos of thousands of cows around the world. The research found that most cattle that were grazing or resting tended to align their bodies in a north-south direction. This finding was true for cattle on different continents, according to the study led by Hynek Burda and Sabine Begall from the University of Duisburg-Essen in Germany. “The magnetic field of the Earth has to be considered a factor,” the scientists said.

After seeing the study, Tina Hinchley, who operates a dairy farm, decided to look again at an aerial photo taken of her farm a few years ago. “The cows that were in the pasture were all over the place ... about two-thirds were north-south,” Hinchley said. Hinchley stressed that cow comfort may be a factor. “They don’t like to get too hot. Their body temperature is 34 degrees Celsius. They are wearing black leather jackets, literally! If turning north-south would keep them cooler, they would stand that way.” The research team said that they were able to discount weather effects by analyzing the position of the sun based on shadows.

“This is a surprising discovery,” said Kenneth J. Lohmann of the University of North Carolina. “Nothing like this has been observed before in cattle or in any large animal.” However, Lohmann was cautious about the findings of the research team. “To demonstrate that cattle have a magnetic sense, some kind of experimentation will eventually be needed.” Alignment to magnetic fields has been found in honeybees and termites, he noted. Now the researchers are moving on to study sheep, goats, horses, and some deer species, Begall added.

<注> graze 草を食(は)む align 整列する pasture 牧草地 termite シロアリ

(設問)

A-1 What is the main finding of the research from the University of Duisburg-Essen?

1. Cattle prefer to move from north to south.
2. Cattle naturally rest and graze in the north.
3. Cattle tend to position their bodies in a north-south direction.

A-2 Which of the following do the researchers believe may be a possible cause?

1. The movement of cattle may depend on which continent the cattle are living on.
2. Cattle may be sensitive to the Earth’s magnetic field.
3. The weather seems to be the main cause.

A-3 How does the dairy farmer feel about the report?

1. She is pleased because the findings of the research will be a great help to her in the future.
2. She is hoping to read more of the report very soon.
3. She seems basically to accept some but not all of the report’s conclusions.

A-4 Which of the following best summarizes the reaction of the scientist from the University of North Carolina?

1. The scientist says that these were the findings that he would have expected.
2. He says that he has read many other similar reports.
3. He thinks that the findings are interesting but more research is still necessary.

A-5 What is the team from the University of Duisburg-Essen planning to do next?

1. They are planning to perform a similar study into the behavior of other large animals.
2. They are planning to investigate whether people have the same magnetic sense as cattle.
3. The next step will be a detailed study of the alignment of bees and termites.

2. 次の英文 A-6 から A-9 までは、航空通信に関する国際文書の規定文の趣旨に沿って述べたものである。この英文を読み、それに続く設問に答えなさい。解答は、それぞれの設問に続く選択肢 1 から 3 までの中から、答えとして最も適切なものを一つずつ選び、その番号のマーク欄を塗りつぶしなさい。

A-6 An aeronautical station having traffic for an aircraft station may call this station if it has reason to believe that the aircraft station is keeping watch and is within the designated operational coverage area of the aeronautical station.

(設問) At what times may an aeronautical station that has traffic for an aircraft station call that aircraft station?

1. The aeronautical station may call an aircraft station within its designated operational coverage area at any time.
2. The aeronautical station may call an aircraft station when it believes there is heavy traffic within its designated operational coverage area.
3. The aeronautical station may call an aircraft station that it believes is keeping watch within its area of designated operational coverage.

A-7 Aircraft stations and aircraft earth stations in flight shall maintain service to meet the essential communications needs of the aircraft with respect to safety and regularity of flight and shall maintain watch as required by the competent authority and shall not cease watch, except for reasons of safety, without informing the aeronautical station or aeronautical earth station concerned.

(設問) What should an aircraft station or an aircraft earth station do when it is about to cease watch, except when doing so for safety reasons?

1. Aircraft stations and aircraft earth stations must never cease watch for any reason.
2. An aircraft station or aircraft earth station that intends to cease watch must usually inform the appropriate aeronautical or aeronautical earth station.
3. A station that decides to cease watch must first inform the competent authority of the essential communications needs of the aircraft.

A-8 Messages without specific address containing meteorological information received from an aircraft in flight shall be forwarded without delay to the meteorological office associated with the point of reception.

(設問) What should be done with non-addressed messages received from an aircraft in flight that contain weather information?

1. The messages should immediately be passed on to the appropriate meteorological office.
2. All such messages should be addressed and returned to the original transmitting aircraft.
3. Forwarding of such messages should be delayed until the information contained in the message has been confirmed.

A-9 An aeronautical station should acknowledge position reports and other flight progress reports by reading back the report and terminating the readback by its call sign, except that the readback procedure may be suspended temporarily whenever it will alleviate congestion on the communication channel.

<注> alleviate 緩和する

(設問) In what circumstances may an aeronautical station temporarily ignore its normal readback procedure for flight reports?

1. Correct readback procedure must be followed at all times.
2. Usual readback procedure may be temporarily ignored in order to improve communication at especially busy times.
3. Normal readback procedure may be temporarily ignored if the aeronautical station is unable to acknowledge the position of an aircraft.

3. 次の設問 B-1 の日本文に対応する英訳文の空欄（ア）から（オ）までに入る最も適切な語句を、その設問に続く選択肢 1 から 9 までの中からそれぞれ一つずつ選びなさい。解答は、選んだ選択肢の番号のマーク欄を塗りつぶしなさい。

（設問）

B-1 アメリカの火星探査機フェニックスは火星に着陸し、土のサンプルから水や有機化合物の痕跡があるかどうかを調べている。調査の結果次第では、火星における生命の存在について、長く続いている議論に結論がでるかもしれない。

The American Mars probe, Phoenix, has (ア) on Mars and is examining soil samples for traces of water and (イ) materials. Its (ウ) could resolve the old (エ) about life (オ) Mars.

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| 1. at | 2. controversy | 3. findings |
| 4. judgment | 5. landed | 6. living |
| 7. on | 8. organic | 9. taken off |

4. 次の設問 B-2 の日本文に対応する英訳文の空欄（ア）から（オ）までに入る最も適切な語句を、その設問に続く選択肢 1 から 9 までの中からそれぞれ一つずつ選びなさい。解答は、選んだ選択肢の番号のマーク欄を塗りつぶしなさい。

（設問）

B-2 電波は多くの分野で活用されている。多くの人々にとって携帯電話やテレビジョン放送は、日常生活になくてはならないものの一つである。これらの電波は、勿論、規則に従って使用されている。電波の間違った使用は無線通信を妨害したり、ときには航空機や船舶の安全性を損なうおそれがある。

Radio waves are utilized in many (ア). To many people cell phones and TV broadcasts are now an (イ) part of daily life. The waves must, of course, be used (ウ) accordance with the regulations. The (エ) use of radio waves could (オ) with radio communications and even compromise the safety of aircraft and ships.

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|--------------|----------------|------------------|
| 1. by | 2. fields | 3. in |
| 4. improper | 5. indifferent | 6. indispensable |
| 7. interfere | 8. lands | 9. result |

5. 次の設問 B-3 の日本文に対応する英訳文の空欄（ア）から（オ）までに入る最も適切な語句を、その設問に続く選択肢 1 から 9 までの中からそれぞれ一つずつ選びなさい。解答は、選んだ選択肢の番号のマーク欄を塗りつぶしなさい。

（設問）

B-3 航空局に対して第一回目の呼出を行ってから第二回目の呼出を行うまでに、少なくとも 10 秒間の間隔を置くべきである。こうすれば、航空局が最初の呼出に対して応答の準備を進めている間の不要な送信がなくなる。

After a call has been made to the aeronautical station, a period of (ア) 10 seconds should elapse (イ) a second call is made. This should eliminate (ウ) transmissions (エ) the aeronautical station is getting ready (オ) reply to the initial call.

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|-------------|------------|----------------|
| 1. at least | 2. at most | 3. before |
| 4. by | 5. to | 6. unnecessary |
| 7. usual | 8. while | 9. with |