

航空無線通信士「英語」試験問題

5問 1時間30分

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を一つずつ選び、その番号のマーク欄を黒く塗りつぶしなさい。

Geometric clusters of cyclones encircle Jupiter's poles and its atmosphere is deeper than scientists had suspected. These were some of the findings of four international research teams based on observations by NASA's Juno spacecraft. The fifth planet from the sun, Jupiter is by far the largest in our solar system. Launched in 2011, Juno has been orbiting Jupiter since 2016 and peering beneath the thick ammonia clouds. It is only the second spacecraft to circle the planet; Galileo did so from 1995 to 2003.

One group uncovered a constellation of nine cyclones over Jupiter's north pole and six over the south pole. The wind speeds exceed Category 5 hurricane strength in places, reaching 350 km/h. The massive storms haven't changed position much since observations began. Team leader Alberto Adriani of Italy's National Institute for Astrophysics in Rome was surprised to find such complex structures. Scientists thought they would find something similar to the six-sided cloud system spinning over Saturn's north pole. Instead, what they found on Jupiter was an octagonal grouping over the north pole, with eight cyclones surrounding one in the middle, and a pentagonal batch over the south pole. Each cyclone is thousands of kilometers across.

Another of the studies published in a recent scientific journal finds that Jupiter's crisscrossing east-west jet streams actually penetrate far beneath the visible cloud tops. Refined measurements of Jupiter's uneven gravity field enabled the Weizmann Institute of Science's Yohai Kaspi in Rehovot, Israel, and his colleagues to calculate the depth of the jet streams at about 3,000 km. "The result is a surprise because this indicates that the atmosphere of Jupiter is massive and extends much deeper than we previously expected," Kaspi said in an email.

By better understanding these strong jet streams and the gravity field, Kaspi said, scientists can better decipher the core of Jupiter. A similar situation may be occurring at other gas giants like Saturn, where the atmosphere could be even deeper than Jupiter's, he said. Jonathan Fortney of the University of California, Santa Cruz, who was not involved in the research, called the findings "extremely robust" and said they show that "high-precision measurements of a planet's gravitational field can be used to answer questions of deep planetary dynamics."

<注> constellation 集まり crisscrossing 行ったり来たりする decipher 解読する

(設問)

A-1 What is special about the spacecraft Galileo?

1. It made the first complete orbit of the planet Jupiter.
2. It was the second spacecraft to travel from Earth to Jupiter.
3. It was the first spacecraft to reach Jupiter after the long journey from 1995 to 2003.

A-2 Which of the following was reported in the research mentioned in the article?

1. There are complex systems of huge storms over both of Jupiter's poles.
2. The atmosphere at Jupiter's north pole is deeper than at the south pole.
3. The heavy atmosphere of Jupiter may be able to support some life forms.

A-3 How do the storm patterns of the north pole of Jupiter differ from those found on Saturn?

1. There are fewer clouds over the north pole of Jupiter than on Saturn.
2. While Saturn has a six-sided cloud system, the research revealed a cluster of nine cyclones over Jupiter's north pole.
3. The research showed Saturn's north pole to be the same as the south pole of Jupiter but very different from Jupiter's north pole.

A-4 What does the scientist from Israel say about the atmosphere of Jupiter?

1. According to the scientist, the data was in line with previous expectations.
2. The scientist argues that the study shows the atmosphere of Jupiter to be deeper than anticipated.
3. It is the Israeli scientist's opinion that the gravity field on Jupiter is too uneven to be measured accurately.

A-5 How does Jonathan Fortney of the University of California feel about the findings of the research?

1. It is his view that the results from Juno are still unreliable.
2. He believes that the data are solid and the method is useful for understanding planets' internal dynamics.
3. He says that high-precision instruments will have to be built in order to answer deep questions of planetary dynamics.

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黒く塗りつぶしなさい。

A-6 An aircraft operated as a controlled flight shall maintain continuous air-ground voice communication watch on the appropriate communication channel of, and establish two-way communication as necessary with, the appropriate air traffic control unit. SELCAL (selective-calling) or similar automatic signaling devices satisfy the requirement to maintain an air-ground voice communication watch.

(設問) Which is a requirement of an aircraft operated as a controlled flight?

1. An aircraft must monitor air-ground voice communication at all times.
2. An aircraft is obliged to establish two-way communication at the earliest opportunity.
3. Automatic signaling devices, such as SELCAL, are insufficient to meet the air-ground voice monitoring requirement.

A-7 The radiotelephone alarm signal, when generated by automatic means, shall be sent continuously for a period of at least thirty seconds but not exceeding one minute; when generated by other means, the signal shall be sent as continuously as practicable over a period of approximately one minute.

(設問) What is the appropriate duration for an automatically generated radiotelephone alarm signal?

1. Such a signal should continue for between 30 and 60 seconds.
2. Automatic alarm generating systems must last for at least one minute.
3. The length of an automatic radiotelephone alarm signal must never exceed 30 seconds.

A-8 In the interests of runway protection, communication methods must be such as to reduce the likelihood of misunderstanding and the procedures used should be such that they will not result in an aircraft or vehicle entering an operational runway without clearance.

(設問) What is the priority for runway-related communication?

1. Communication is not allowed when an aircraft or vehicle has entered an operational runway.
2. Communication methods should be chosen appropriately to avoid the risk of misunderstanding.
3. Communication regarding the operation of runways should be reduced to the minimum possible level.

A-9 The frequency 156.3 MHz may be used by stations on board aircraft for safety purposes. It may also be used for communication between ship stations and stations on board aircraft engaged in coordinated search and rescue operations. The frequency 156.8 MHz may be used by stations on board aircraft for safety purposes only.

(設問) What is the main difference between the frequencies 156.3 MHz and 156.8 MHz?

1. 156.8 MHz is a multipurpose frequency but 156.3 MHz has only a single use.
2. 156.3 MHz can be used by stations on board aircraft for safety purposes but, unlike 156.8 MHz, may also be used in other circumstances.
3. Both frequencies are allowed for search and rescue activities as well as safety purposes, so there is no significant difference between them.

3. 次の設問B-1の日本語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黒く塗りつぶしなさい。

(設問)

B-1 航空交通管理センターは、日本の航空交通管理の中心的な機能の提供のため2005年に設置された。その主要業務の一つは航空交通流管理業務であり、同業務においてセンターは飛行経路を管理し、地上の航空機に対する出発時刻及び出発間隔の、そして到着機に対する混雑空域への入域時刻及び間隔の決定を行い、離陸又は着陸時刻の割当てを関係する航空管制官に対して発出する。

The Air Traffic Management Center was (ア) in 2005 to serve a (イ) function for Japanese air traffic management. One of its major services is air traffic (ウ) management, (エ) it manages flight routes, determines departure times and intervals for planes on the ground and entering times and intervals for arriving traffic approaching busy (オ), and issues take-off or landing schedules to relevant ATC controllers.

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| 1. airspaces | 2. atmosphere | 3. central |
| 4. current | 5. established | 6. flow |
| 7. surrounding | 8. where | 9. which |

4. 次の設問B-2の日本語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黒く塗りつぶしなさい。

(設問)

B-2 大きさ160万平方キロメートル以上の太平洋ゴミベルトの航空画像により、そのゴミの塊の密度がこれまでの見積もりより16倍も大きいことが明らかになった。その画像は79,000トンのプラスチックの蓄積を示しており、その蓄積は食物連鎖に対する重大な脅威をもたらすものである。

Aerial images of the Great Pacific Garbage Patch, which is more than 1.6 (ア) square kilometers in area, have (イ) that the mass of trash is (ウ) 16 times denser than had previously been estimated. They show an (エ) of 79,000 tons of plastic, which (オ) a significant threat to the food chain.

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|------------------|-----------------|---------------|
| 1. accommodation | 2. accumulation | 3. as much as |
| 4. billion | 5. brightened | 6. million |
| 7. multiples of | 8. poses | 9. revealed |

5. 次の設問B-3の日本語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黒く塗りつぶしなさい。

(設問)

B-3 VFR(有視界飛行)の航空機に対しては一般に、垂直間隔が規定されない。しかしながら、水面又は地表から3,000 フィートと29,000 フィートの間でのVFR巡航は、原則として割り当てられている高度に基づいて行われるべきである。

The vertical (ア) is generally not provided for a VFR (Visual Flight Rules) aircraft. VFR (イ), however, should in principle be (ウ) on the altitude (エ) when operating between 3,000 and 29,000 feet above the sea or ground (オ).

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|-------------------|---------------|---------------|
| 1. area | 2. assignment | 3. cruising |
| 4. discrimination | 5. homework | 6. level |
| 7. predicated | 8. sailing | 9. separation |