

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塗りつぶしなさい。

A group of mechanical, battery-powered robots in the shape of fish will be released into a Spanish port to help monitor pollution there, scientists said Friday. The 1.5-meter-long robots work by mimicking the quick movements of a fish's tail, according to University of Essex robotics expert Huosheng Hu.

He said the robo-fish would be equipped with sensors to monitor oxygen levels in the water, detect oil slicks spilled from ships or contaminants pumped into the water from underground pipes. The robotic fish will patrol the harbor of Gijon, in northern Spain.

"The design of fish which nature has produced is a very energy-efficient one," Doyle said.

"The fish's efficiency is created by hundreds of millions of years of evolution. Submarines come nowhere near it."

Information gathered from the robo-fish would be transmitted to the port's control center using a wireless Internet signal when the devices surfaced.

The fish won't need remote guidance – their sensors can help them avoid obstacles such as rocks or moving ships, said Doyle, who works for the engineering consultancy BMT Group Ltd.

When the robo-fish's batteries are nearing the end of their eight-hour capacity, they can swim back to a power hub to recharge.

(注) mimic まねる oil slick 油膜 contaminants 汚染物質 evolution 進化 power hub 電力の供給所

(設問)

A-1 Do the robo-fish use a screw propeller to swim?

1. Yes, the propeller is very small and attached to the tail.
2. Yes, but the propeller needs a lot of fuel to spin.
3. No, the robo-fish use a tail like real fish.

A-2 For what purpose will the robo-fish be used?

1. One purpose is to check the oxygen levels in the harbor of Gijon.
2. One purpose is to pump dirty water out from the harbor of Gijon.
3. One purpose is to provide oxygen for the harbor of Gijon.

A-3 Why can the robo-fish swim so efficiently?

1. The fish are equipped with efficient screw propellers.
2. The robo-fish's shape and quick movements are similar to those of real fish.
3. The robo-fish was created by hundreds of millions of years of effort.

A-4 How do the robo-fish report back the information they gather to the port's control center?

1. They dive to the bottom of the harbor and send the data from there.
2. They return to the port's control center to hand over the data directly.
3. They come up to the surface and send the data from there.

A-5 How do the robo-fish avoid obstacles?

1. The center controls the robo-fish's direction of travel by wireless.
2. The robo-fish avoid them by using their sensors.
3. The obstacles move to avoid a collision.

2. 次の英文 A-6 から A-9 までは、海上移動業務で守らなければならない事項に関する国際文書の規定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 The frequency 156.8 MHz is the international frequency for distress traffic and for calling by radiotelephony when using frequencies in the authorized bands between 156 MHz and 174 MHz.

(設問) Your ship is not in trouble and you wish to call another ship station by radio telephony. Can you use 156.8 MHz for the call?

1. Yes, I can when using certain frequencies.
2. No, the frequency can only be used if I am in distress.
3. It is not clear.

A-7 When transmitting digital selective calls and acknowledgements in the bands between 415 kHz and 526.5 kHz, coast stations should use the minimum power necessary to cover their service area.

(設問) Must a coast station reduce its power when it is already hardly sufficient to communicate with ship stations in its service area?

1. Yes, it must do so.
2. Yes, it must always decrease the power farther.
3. No, it does not need to do so.

A-8 The international digital selective-calling frequency 458.5 kHz may be used by any ship station. In order to reduce interference on this frequency, it shall only be used when calling cannot be made on national frequencies assigned to the coast stations.

(設問) Which of the following frequencies should be used if possible?

1. 458.5 kHz.
2. National frequencies.
3. International digital selective-calling frequencies.

A-9 When any ship station transmitter itself cannot be controlled in such a way that its frequency satisfies the tolerance specified in Appendix 2, the ship station shall be provided with a device, having a precision equal to at least one-half of this tolerance, for measuring the frequency of the emission.

(注) tolerance 許容偏差 appendix 付録 specify 掲げる precision 精度

(設問) Must every ship station be provided with this device for measuring the frequency of its transmitter emission?

1. Yes, every ship station must be provided with the device without exception.
2. No, not every ship station needs to have the device.
3. No, it depends on the properties of the transmitter.

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 最近、ある科学者たちは、今世紀に、海面の高さが以前の予想よりも、数倍も高く上昇するかもしれないと警告している。

Some scientists have (ア) been (イ) that sea levels may (ウ) several (エ) higher this century (オ) previous forecasts had suggested.

- | | | | | |
|------------|-------------|-----------|---------|-------|
| 1. warning | 2. recently | 3. notice | 4. rise | 5. up |
| 6. times | 7. degrees | 8. rather | 9. than | |

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 この湾は、航行に十分な深さがある。しかし、交通が激しく、また多くの漁船や遊覧船があちらこちらにいたので、十分注意をして進む必要があります。

The bay has sufficient (ア) of water for sailing but you will (イ) to (ウ) very carefully (エ) the traffic is (オ) and the bay is dotted with many fishing and pleasure boats.

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|------------|-----------|----------|--------------|------------|
| 1. depth | 2. deep | 3. need | 4. necessary | 5. proceed |
| 6. because | 7. due to | 8. heavy | 9. much | |

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。なお、選択肢の語句は、文頭にくるものも小文字で記してある。

(設問)

B-3 もし、搬送周波数 2,182kHz で送信した遭難通報に対して受信証が得られないならば、呼出し及び通報は、搬送周波数 4,125kHz 又は 6,215kHz で再度送信することができる。

(ア) a distress message on the carrier frequency 2,182 kHz has (イ) been (ウ), the distress call and message may be (エ) again on a (オ) of 4,125 kHz or 6,215 kHz.

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|----------|----------------------|-------------------------------|-------|----------------|-----------------|
| 1. no | 2. if it is | 3. not | 4. if | 5. transmitted | 6. acknowledged |
| 7. sends | 8. carrier frequency | 9. carrier frequencies except | | | |