2012年度

Dz 英 語 問 題

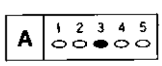
注　意

1. 試験開始の指示があるまでこの問題冊子を開いてはいけません。
2. 解答用紙はすべて**ＨＢの黒鉛筆またはＨＢの黒のシャープペンシル**で記入することになっています。ＨＢの黒鉛筆・消しゴムを忘れた人は監督に申し出てください。(万年筆・ボールペン・サインペンなどを使用してはいけません。)
3. この問題冊子は**12ページ**までとなっています。試験開始後，ただちにページ数を確認してください。なお，問題番号はⅠ～Ⅴとなっています。
4. 解答用紙にはすでに受験番号が記入されていますので，出席票の受験番号が，あなたの受験票の番号であるかどうかを確認し，出席票の氏名欄に**氏名**のみを記入してください。なお，出席票は切り離さないでください。
5. 解答は解答用紙の指定された解答欄に記入し，その他の部分には何も書いてはいけません。
6. 解答用紙を折り曲げたり，破ったり，傷つけたりしないように注意してください。
7. この問題冊子は持ち帰ってください。

マーク・センス法についての注意

マーク・センス法とは，鉛筆でマークした部分を機械が直接よみとって採点する方法です。

1. マークは，下記の記入例のようにＨＢの黒鉛筆で枠の中をぬり残さず濃くぬりつぶしてください。
2. １つのマーク欄には１つしかマークしてはいけません。
3. 訂正する場合は消しゴムでよく消し，消しくずはきれいに取り除いてください。

マーク記入例： 

（3と解答する場合）

I．次の文を読み，下記の1～10それぞれに続くものとして，本文の内容ともっともよく合致するものを，各イ～ニから1つずつ選び，その記号を解答用紙の所定欄にマークせよ。

In February 1635, the philosopher and scientist René Descartes was in Amsterdam for a couple of snowy days, and his descriptions of the snowflakes he saw have never been bettered: "...what astonished me most was that some flakes had six little teeth around them, like clockmakers' wheels... There followed after this little crystal columns, decorated at each end with a *six-petalled rose a little larger than their base."

Descartes's brief descriptions go to the heart of both what's so obvious and so subtle about snowflakes. Every kid knows that snowflakes are six-sided. But scientists still haven't solved the problem of how all snowflakes can be six-sided and yet take so many different shapes. If snowflakes are all made in roughly the same way, how is it that some are like "clockmakers' wheels" and others "crystal columns," miniature six-sided pillars?

What's amazing about Descartes's description is that it's apparently only the second time anyone in Europe acknowledged, in print, that all snowflakes are six-sided. The credit for first mention goes to Johannes Kepler, an astronomer known mostly for his work on the shapes of planetary orbits, who in 1611 wrote a little book called *The Six-Cornered Snowflake*. If you go back a half-century before that, it's apparent that the **hexagonal shape of snowflakes was not common knowledge in Europe. A drawing in a 1555 book by the Archbishop of Uppsala shows twenty-three versions of snowflakes, only one of which is six-sided. The variety of the other shapes—eyes, hands, bells, arrows and half-moons—makes it clear that the author had no idea which shape was correct. In contrast, the Chinese had described the true shape of snowflakes at least as early as the second century A.D.

At first glance it seems ridiculous that four hundred years ago no one in Europe knew, or at least publicly acknowledged, that all snowflakes are six-sided. You usually don't have to spend more than a few moments in falling snow before you can find individual six-sided flakes on the windshield of your car or the sleeve of your coat. On the other hand, it's always easier to see something if you already know it exists—would we notice those perfect little hexagons so readily if we hadn't been taught from kindergarten that they're there?

Recognizing that snowflakes are six-sided is only the beginning—even Kepler realized that the really interesting question is why. What force could produce millions of flakes out of frozen water that, whether flat plates or columns or stars, all have six sides? He figured that snowflakes must be assembled from smaller sub-units, and that six-sidedness had something to do with packing them together efficiently. He was interested in the fact that hexagons appeared in other situations where efficient packing was paramount, as in the individual cells in a bee's honeycomb. But he couldn't explain why snowflakes are six-sided.

It wasn't until this century that at least part of Kepler's question could be answered. The architecture of snowflakes depends first on the water molecule itself. Water is, of course, two atoms of hydrogen and one of oxygen: H_2O. At room temperature, when water is liquid, the H_2O molecules are vibrating and sliding past each other, colliding and rebounding, leaving virtually no space between them. But if the temperature drops low enough, this normal interactive movement of water molecules can be overcome by electrical forces acting among them, and they then all snap into fixed positions relative to each other. That's freezing.

When freezing immobilizes the water molecules, it forces them to move apart and take only rigid arms-length positions with respect to each other. X-rays of such ice crystals reveal a remarkable repeating pattern of hexagons: six water molecules at each corner, in turn bonded to other water molecules beside, above and below. Kepler was closer than he realized: at the micro level, a mass of ice crystals looks like a vast honeycomb in a bee's nest.

This repeating hexagonal pattern holds the key to the formation of snowflakes. Under the right circumstances in the atmosphere, a crystal will start to grow (usually on a dust particle), adding water molecules to its edges, always preserving the underlying hexagonal organization. By the time it's big enough to see, you have a snowflake.

The greatest snowflake scientist of the twentieth century is the late Ukichiro Nakaya, a nuclear physicist whose life was changed when he was appointed to be head of physics at Hokkaido University, Japan in 1932. The university didn't have the facilities to do nuclear physics, but there was lots of snow there. Nakaya took a pragmatic approach and changed his field of study. He was the first scientist to produce snowflakes in the lab. He strung rabbit hairs like miniature ***clotheslines in cold chambers filled with water vapour. Rabbit hairs are lined with little knots that provide the same opportunity for starting the growth of snowflakes as do dust particles in the air: snow crystals can settle on them and begin to add new crystals from the surrounding air.

Nakaya showed for the first time why snowflakes can be anything from delicate six-fingered stars to six-sided shields, or even the pillars with hexagonal caps on both ends that Descartes mentioned. Their shapes reflect their histories—as Nakaya wrote: "a snowflake is a letter to us from the sky."

Temperature and humidity are the key—as they change, the way snow crystals grow changes as well. If a snowflake is forming in fairly dry air at −15 degrees Celsius, it will be plate-shaped, but at 10 degrees less than that it will form as a solid column. The feathery six-armed Christmas card snowflakes develop only in very wet air at around −14 degrees Celsius. You can imagine how complicated it can be if a snowflake starts at one temperature and humidity, then is carried by winds up, then down, first moving quickly, then slowly (differences in speed affect the growth of the crystal), then finally falling to earth, encountering yet more changes in temperature and humidity. With each change the growing flake will alter its ongoing pattern, while preserving what's already there. As Nakaya suggested, you could read the history of that flake by its shape.

*six-petalled：六つの花弁のある
**hexagonal：六角形の
***clotheslines：物干し用ひも

1. The author mentions the 1555 book by the Archbishop of Uppsala (paragraph 3) to show that the six-sided shape of snowflakes was
イ. not common knowledge at that time.
ロ. a source of artistic inspiration.
ハ. first described by the Chinese.
ニ. well understood by the author of the book.

2. One idea of paragraph 4 is that

イ. people should not be afraid to say what they really think.

ロ. we are most unlikely to remember things that we learn at a young age.

ハ. people should take time to notice the simple things in life.

ニ. we often don't notice things that we haven't learned about beforehand.

3. The passage suggests that Johannes Kepler

イ. was the second European to describe the six-sided shape of snowflakes.

ロ. compared the shape of snowflakes to the shape of planetary orbits.

ハ. did not understand why snowflakes have six sides.

ニ. contributed to the scientific study of water molecules.

4. The underlined word "paramount" (paragraph 5) is closest in meaning to

イ. certain.

ロ. essential.

ハ. possible.

ニ. unusual.

5. When water molecules freeze, they

イ. give off an electric force.

ロ. move apart from one another.

ハ. break into several parts.

ニ. slide close together.

6. The underlined word "pragmatic" (paragraph 9) is closest in meaning to

イ. basic.

ロ. clear.

ハ. practical.

ニ. strange.

7. Ukichiro Nakaya used rabbit hairs to make snowflakes because

イ. crystals can grow on them.

ロ. there were no dust particles in the lab.

ハ. the hairs do not freeze.

ニ. the hairs attract dust particles.

8. The last paragraph of the passage indicates that snowflakes become like a solid column at around

イ. −10 degrees Celsius.

ロ. −15 degrees Celsius.

ハ. −20 degrees Celsius.

ニ. −25 degrees Celsius.

9. One of Ukichiro Nakaya's most important achievements was to explain why

イ. ice crystals form a repeating pattern of hexagons.

ロ. snowflakes have such a variety of shapes.

ハ. ice crystals settle on dust particles in the air.

ニ. snowflakes in Hokkaido look different from snowflakes in other places.

10. The most appropriate title for this passage is

イ. The Physics of Ice Formation.

ロ. How Many Shapes Do Snowflakes Have?

ハ. The Mystery of Snowflakes.

ニ. Ukichiro Nakaya: Nuclear Physicist.

Ⅱ．次の１～５それぞれの空所を補うのにもっとも適当なものを，各イ～ニから１つずつ選び，その記号を解答用紙の所定欄にマークせよ。

1．Do you think there is a （ 1 ） of the two countries agreeing on the new peace treaty?

イ．perspective　ロ．progress　ハ．prospect　ニ．prosperity

2．What you said may be disappointing for others to hear; （ 2 ） it is true.

イ．contrary　ロ．despite　ハ．instead　ニ．nonetheless

3．Because of a mechanical breakdown, our arrival at Cardiff Central Station will be late. We （ 3 ） for the delay.

イ．apologize　ロ．blame　ハ．pardon　ニ．regret

4．On a （ 4 ） of 1 to 10, how satisfied are you with our service?

イ．degree　ロ．grade　ハ．rate　ニ．scale

5．The number you dialed is not （ 5 ）. Please check the number and try again.

イ．of service　ロ．to order　ハ．in service　ニ．in order

Ⅲ. 次の空所(1)〜(5)を補うのにもっとも適当なものを，それぞれ対応する下記のイ〜ニから1つずつ選び，その記号を解答用紙の所定欄にマークせよ。

Situation: One Sunday afternoon Eric Reynolds runs into a friend from work on the sidewalk near Central Park.

ERIC: Hey, Jim. Where are you going?

JIM : Oh, hi, Eric. (1) I'm going to my aikido class.

ERIC: What's aikido?

JIM : It's a Japanese martial art based on "ki". Ki is a kind of energy flow.

ERIC: (2) Is it similar to karate or kung-fu?

JIM : No, it's different—more spiritual.

ERIC: Oh, really. How long have you been doing it?

JIM : About a year. You should try it. It's really good for your health.

ERIC: No, thanks. I haven't got much energy left for hard exercise like that.

JIM : Oh, it's not that hard. Anyone can do it. I've got a good teacher. He's gentle but he can literally throw you around without making physical contact.

ERIC: (3)

JIM : It's true. I've seen it with my own eyes.

ERIC: Could be dangerous.

JIM : Yeah, you have to learn how to land. (4)

ERIC: Not really. I used to play volleyball, though.

JIM : Oh, did you? In college?

ERIC: Yeah, I was on a college volleyball team. I was a spiker.

JIM : Spiker is a great position.

ERIC: Oh, it was lots of fun. My wife was on the team, too.

JIM : So that's (5)

ERIC: Yep.

JIM : Lucky for both of you.

ERIC: Yes, I guess so.

JIM : Oh, look at the time! I'm late. Catch you later.

ERIC: See you. Have fun!

(1) イ. How did it go?

ロ. How are you doing?

ハ. What's the matter?

ニ. What'll it be?

(2) イ. You must be crazy.

ロ. I love Japanese art.

ハ. Of course.

ニ. Sounds mysterious.

(3) イ. I don't believe it.

ロ. That must hurt.

ハ. He's smart.

ニ. That's life.

(4) イ. Do you have time now?

ロ. Do you play sports these days?

ハ. Why don't you come with me?

ニ. Do you practice aikido?

(5) イ. where you married Diana.

ロ. what Diana wanted you to do.

ハ. why Diana left you.

ニ. how you met Diana.

Ⅳ. 次の文中の空所(１)～(５)を補うのにもっとも適当な語を，それぞれ対応する下記イ～ニから１つずつ選び，その記号を解答用紙の所定欄にマークせよ。

One evening, as I walked along a country road, I heard strange music. I followed the sound. (1) my surprise, I found a group of tiny men dressed in green jackets and red caps trimmed with white feathers. They had planted an oak tree and were dancing gaily (2) it. They seemed very happy. A silver crescent hung low in the sky. Dark pines (3) like soldiers guarding the entrance to this magic space. Suddenly one of them spied me sitting on the hill and said, "He will (4) a fine boy to do our work." As they rushed toward me I cried, "Mother! Father! Save me (5) these little fellows." At that moment, I felt my mother shake me and heard her tell me to get up. She laughed as I told her about my experience in Dreamland.

(１) イ. As　ロ. In　ハ. To　ニ. With

(２) イ. around　ロ. into　ハ. outside　ニ. without

(３) イ. bent　ロ. fell　ハ. found　ニ. stood

(４) イ. bring　ロ. look　ハ. make　ニ. see

(５) イ. among　ロ. from　ハ. to　ニ. with

V. 次の1～5それぞれの空所を補うのにもっとも適当なものを，各イ～ニから1つずつ選び，その記号を解答用紙の所定欄にマークせよ。

1. The tales of Pooh Bear and his animal friends are treasures for children of (　　).

イ. all ages　　ロ. all day　　ハ. all the age　　ニ. all the time

2. If you are (　　) another flight, an attendant at the gate will give you the departure gate number for that flight.

イ. continuing at　　ロ. continuing　　ハ. connecting　　ニ. connecting to

3. The (　　) French words on the English language has been great.

イ. consequence from　　ロ. consequence of

ハ. influence of　　ニ. influence toward

4. Unfortunately, her fame as a painter did not come (　　) her death.

イ. following to　　ロ. later than　　ハ. unless before　　ニ. until after

5. A frightening nightmare (　　) a child to wake up and cry.

イ. can cause　　ロ. may give　　ハ. may grow　　ニ. can let

【以下余白】