

# 2024학년도 재외국민과 외국인 특별전형 필기고사 문제

- 자연계열 -



모집단위	
수험번호	
성명	

※ 감독자의 지시가 있을 때까지 다음 장으로 넘기지 마시오.

**영어(1~20번) [100점 만점]**

※ 1 ~ 20번: 각 5점

[1~7] 다음 빈칸에 들어갈 가장 적절한 것은?

1. He also met with soldiers who had fought in the jungles of Mexico, and he listened to the stories of these men to gain \_\_\_\_\_ for his jungle paintings.

- ① indignity                      ② inspiration
- ③ discouragement            ④ humiliation
- ⑤ possessions

2. Cars should be able to endure the strong impact that they receive when they crash into another car or object. Thus, the bodies of cars are designed to \_\_\_\_\_ heavy shocks efficiently.

- ① maintain                      ② implement
- ③ damage                        ④ absorb
- ⑤ amplify

3. Once you \_\_\_\_\_ what makes you different, learn as much as you can about it. Keep perfecting that special skill that makes you different from the rest of the crowd.

- ① confine                        ② yield
- ③ detest                         ④ abandon
- ⑤ embrace

4. In the 1860s, the populations of Manhattan and Brooklyn were rapidly increasing, and so was the number of the \_\_\_\_\_ between them. Thousands of people took boats and ferries across the East River every day to work.

- ① commuters                    ② immigrants
- ③ entertainers                 ④ travelers
- ⑤ pioneers

5. Water is very important for basic body functions because about 70% of our body is water, and we need about 2 liters of water a day. However, many of us don't get enough water and eventually experience \_\_\_\_\_.

- ① dehydration                 ② rejoice
- ③ waterproof                 ④ rehabilitation
- ⑤ hydrophobia

6. To increase its annual sales, the company analyzed \_\_\_\_\_ factors such as technological changes and the economic environment.

- ① irrelevant                    ② inherent
- ③ temporary                  ④ external
- ⑤ positive

7. Animals living in the wild, including humans, evolved in environments where food was \_\_\_\_\_ and meals were obtained only intermittently.

- ① wasteful                      ② authentic
- ③ sparse                        ④ savory
- ⑤ abundant

[8~10] 다음 글의 밑줄 친 부분 중, 어법상 틀린 것은?

8.

Knowing your own strengths and weaknesses gives you a better understanding of ① yourself. Understanding your strengths keeps you ahead in a lot of things. On the other hand, knowing your weaknesses gives you a ② clearer understanding of the things that may be holding you back. As ③ hardest as you may try to fix or get rid of your weaknesses, it won't work. Instead, work around your weaknesses and find ways ④ where they don't hinder you. No matter ⑤ what you do, there are a lot of things you can achieve if you knew your true potential.

9.

Today, one of the major concerns around the world ① is the lack of clean water. Hadjara, a 10-year-old girl, spends much of her time walking and waiting for water. She gets up early four days a week to collect water for her family. One day, Hadjara ② sets out before dawn for a nearby spring, which is the closest water source to her home. Getting there involves a dangerous climb down a 700-foot cliff. She skipped breakfast, thinking she could arrive at the spring before most of the others and ③ have a shorter wait.

Upon reaching the spring, however, she found out that many others ④ had left before dawn, too. Even though she waited all day to fill up her pots, she felt lucky that day because she actually got some water. Sometimes the line is too long to get water and she ⑤ has to walk six more hours to the next closest water source.

10.

Ying Zheng imposed his authority on other aspects of his empire. He introduced a unified system of coinage along with ① standardized weights and measures, a universal legal code, and common methods of writing. These changes made daily life more ② orderly and improved the economy by making it easier for people from different regions to trade. Here, Ying Zheng demonstrated his command of design strategy by applying ③ that we now call design thinking to identify what he needed to do to secure the future of his regime. There are parallels between his strategic use of design and ④ its role in successful corporate identity and political campaigns of modern society. This is the power of design: controlling a magnificent empire, making a product more reliable, ⑤ changing people's lives, and improving society.

11. 다음 글의 목적으로 가장 적절한 것은?

When do you think the Korean Wave started? Surprisingly, the long history of the Korean Wave dates back to the Three Kingdoms period. Our performance arts such as orchestras were so popular among our neighboring countries that the Chinese officers at that time even took pride in being able to sing a Korean song or two. Goguryeo's vast network of trade and exchange helped it to adopt musical instruments from those of other nations across all of Asia. It also led them to produce the Goguryeo orchestral music and musicians. In fact, the Chinese historical records show that the Goguryeo orchestra were often invited to the Chinese royal court to perform.

- ① to describe the history of the Korean Wave
- ② to advertise traditional Korean orchestras
- ③ to complain about the distortion of Korean history
- ④ to demonstrate the features of the Korean music
- ⑤ to educate ancient Korean history

12. 다음 글의 제목으로 가장 적절한 것은?

Hundreds of millions of birds have been killed by flying directly into window glass. Birds crash into window glass not only because it is nearly invisible but also because it often confuses birds by reflecting nearby trees, the sky, or the birds themselves. To address this problem, researchers turned their attention to spider webs that reflect ultraviolet (UV) light. The reflected UV light warns birds to avoid flying through the spider webs because birds can easily see the light. The spider webs thus protect themselves from being destroyed. Inspired by this fact, researchers recently developed a new kind of glass. It reflects UV light, just as spider webs do, protecting birds from crashing into it.

- ① Birds in Serious Dangers
- ② Saving Birds with UV Light
- ③ Creative Young Researchers
- ④ How to Avoid Killing Birds
- ⑤ The Beauty of Spider Webs

13. 다음 글의 빈칸 (A), (B), (C)에 가장 적절한 것은?

In high school, I achieved my goal of becoming a skilled soccer player. When I was a first-year student, I joined my school's soccer team. ( A ), I wasn't a fast runner or a good kicker. ( B ), I didn't let my limitations hold me back. I practiced every day, and I was always the last student to leave the field. It was hard work, but I kept believing that I would reach my goal. ( C ), I got better and better. By the end of my junior year, I was the team's top scorer. This experience helped me believe in my own potential. Now I believe I can achieve my goals if I try my hardest.

- |   | (A)      |    | (B)         |    | (C)         |
|---|----------|----|-------------|----|-------------|
| ① | In fact  | -- | In addition | -- | As a result |
| ② | In fact  | -- | As a result | -- | However     |
| ③ | However  | -- | In fact     | -- | Therefore   |
| ④ | At first | -- | Otherwise   | -- | However     |
| ⑤ | At first | -- | However     | -- | As a result |

14. 주어진 대화 다음에 이어질 대화 순서로 가장 적절한 것은?

A: I saw the news report about the environment on TV.

B: So did I. It made me think we should do something more for our environment.

(A) Yes, I think each of our small actions will make a big difference. For example, I always try to use both sides of a piece of paper at school.

(B) I feel the same way.

(C) That's great. I feel bad about wasting food at school, too.

(D) Oh, you're reusing paper. I'm trying to turn off the lights when I'm not using them.

(E) Let's make sure we only put as much food on our plates as we can eat.

① (A) - (C) - (B) - (E) - (D)

② (A) - (D) - (C) - (B) - (E)

③ (B) - (E) - (A) - (D) - (C)

④ (B) - (E) - (D) - (C) - (A)

⑤ (E) - (C) - (A) - (D) - (B)

15. 다음 글의 내용과 일치하는 것은?

Hummingbirds are the smallest bird in the world. These birds are easily recognized due to their special hovering movement and colorful feathers. They flap their wings so fast that they make a humming noise, which is why they are called hummingbirds. Scientists have found that hummingbirds have unique, fast wing strokes, which allow them to fly forward, backward, sideways, and even to stop in midair. Although they are small, they can fly up to 54 kilometers per hour. They are also talented at staying in one place like a bee. How is this possible? They can flap their wings in a peculiar pattern, which enables them to hover. As they hover, they use their long tongues to take sweet liquid from flowers. Their one weakness is their feet. Because they fly so much, they have poorly developed feet, which cannot be used to walk.

① Hummingbirds can sing rubbing their wings together.

② Hummingbirds can take honey from flowers with their beaks.

③ Hummingbirds can be easily captured because of bright feathers.

④ Hummingbirds can use their feet to move backward.

⑤ Hummingbirds can stay in the air flapping their wings in a special way.

16. 다음 글의 분위기로 가장 적절한 것은?

Constructed of titanium and glass, the outside of the architecture looked mysterious against the sunset. The titanium skin appeared to flow in the wind, which made the building look like a live fish. The skin changed its color, reflecting the glow of the sunset. It was simply spectacular! It is said that the best time to appreciate its beauty is at sunset. How lucky I was! I took great photos there and walked around the outside of the museum. There were several unusual pieces of art installed there. The most prominent one was the 9-meter-tall spider sculpture called *Maman*. The spider, who is protecting her precious eggs, was like a creature out of a dream. It was getting late, so I decided to return the next day. I wanted to see the art collections inside the museum, as well as the other artworks outside.

① delighted

② embarrassed

③ relieved

④ disappointed

⑤ isolated

17. 다음 글에서 전체 흐름과 가장 관계 없는 문장은?

Imagine there are two groups of people. In Group A, there are people with higher IQ scores, while the people in Group B have lower IQ scores. Each group is asked to solve some problems together within the group. Between the two groups, which one do you think will solve problems more quickly and accurately? You may predict that Group A will do better since the members of this group scored higher on the IQ tests. ① Surprisingly, however, Group B outperforms Group A. ② It turns out that Group A spends too much time debating instead of focusing on the task itself. ③ The members assert their well-reasoned points of view while pointing out flaws in other member's logic. ④ These individuals are very quick at finding consensus and encouraging others' ideas. ⑤ This fault-finding type of conversation causes unnecessary tension and competition and eventually hinders the team's effectiveness.

[18~19] 다음 글의 밑줄 친 부분 중, 문맥상 낱말의 쓰임이 적절하지 않은 것은?

18.

The global ban on fossil fuels gave a boost to ① alternative energy. A number of companies around the world have built up more ② effective energy sources that can make up for the shortage of fossil fuels. Thanks to the development of renewable energy resources, they now make up more than half of the country's entire power, and this rate is set to grow even ③ bigger. Renewable energy resources come from a wide variety of sources including the sun, the wind, and the sea. Using renewable energy produces less air or water pollution and fewer carbon dioxide ④ infusion than using fossil fuels. The rapid development of renewable energy sources will help us meet energy demands without creating ⑤ much pollution.

19.

People may have thought I was a master knitter when I began yarn bombing, but I actually had no idea how to knit. ① Nonetheless, I did something interesting with knitting that had never been done before. I wasn't "supposed to be" an artist in the sense that I wasn't formally ② trained to do this. I majored in math actually. So I didn't think I'd ever do this, but I also know that I didn't stumble upon it. And when this happened to me, I held on tight, I fought for it, and I'm proud to say that I'm a working artist today. So as you ③ ponder your future, remember that it might not be so ④ seamless. And one day, you might be as ⑤ boring as I was and knit a door handle to change your world forever.

\* yarn bombing: 뜨개실을 사용한 거리예술

20. 다음 문장이 들어갈 가장 적절한 곳은?

For example, some gerontologists examine the social aspects of aging such as finding hobbies, maintaining friendships, and living in retirement.

As we grow into old age, our bodies and minds undergo changes—changes that affect our moods, relationships, physical appearance, and response to illness. (A) Gerontology is an area of study that focuses on these changes. (B) It contributes to our understanding of both the physical and mental aspects of aging. (C) Gerontology requires a multidisciplinary approach that includes biology, psychology, sociology, and more. (D) This means that gerontologists work on various issues in many different fields. (E) Others help create medicine to combat illnesses and disorders that affect older adults, such as sleeping problems, depression, anxiety, Alzheimer's, and diabetes.

① (A)

② (B)

③ (C)

④ (D)

⑤ (E)

(다음 페이지에 계속)

**수학(21~35번) [100점 만점]**



21.  $a$ 가 양의 실수일 때, 사차방정식  $x^4 + ax^2 + 1 = 0$ 의 실근의 개수는? (5점)

- ① 0    ② 1    ③ 2    ④ 3    ⑤ 4

22. 전체집합이  $U = \{x \mid x \text{는 자연수}\}$ 이고  
 $A = \{x \mid x \text{는 3의 약수}\}$   
 이다.  $A \cup X = A$ 를 만족하는  $U$ 의 부분집합  $X$ 의 개수는?  
 (5점)

- ① 0    ② 1    ③ 2    ④ 3    ⑤ 4

23.  $\sin \theta + \cos \theta = \sqrt{2}$  일 때  $\tan \theta + \frac{1}{\tan \theta}$ 의 값은?  
 (5점)

- ① 1    ② 2    ③ 3    ④ 4    ⑤ 5

24.  $i^n + (-i)^n = 0$ 을 만족하는 두 자리 이하 자연수  $n$ 의 개수는? (단,  $i^2 = -1$ ) (5점)

- ① 46    ② 47    ③ 48    ④ 49    ⑤ 50

25. 원  $x^2 + y^2 = 1$  위의 점 P와 원  $x^2 + y^2 = 4$  위의 점 Q에 대하여 선분 PQ의 길이의 최솟값을  $m$ , 최댓값을  $M$ 이라 할 때,  $m + M$ 의 값은? (5점)

- ① 1    ② 2    ③ 3    ④ 4    ⑤ 5

26. 넓이가  $2048 \text{ cm}^2$ 인 로고 그림이 있다. 넓이를  $\frac{1}{2}$ 로 줄이는 과정을  $n$ 번 반복하였더니 로고 그림의 넓이가  $2 \text{ cm}^2$ 이 되었다. 자연수  $n$ 의 값은? (5점)

- ① 9    ② 10    ③ 11    ④ 12    ⑤ 13

27. 무리함수  $f(x) = \sqrt{2x-2} + 1$ 과 그 역함수의 그래프가 만나는 두 점 사이의 거리는? (5점)

- ①  $\sqrt{2}$     ②  $\sqrt{3}$     ③  $2\sqrt{2}$     ④  $2\sqrt{3}$     ⑤  $4\sqrt{2}$

28. 다항식  $x^{2024}$ 을  $x^2 - 1$ 로 나누었을 때 몫을  $Q(x)$ , 나머지를  $R(x)$ 라 하자. 함수  $f(x) = Q(x) + R(x)$ 에 대하여

$$f\left(\frac{1}{\sqrt{2}}\right) = a - \frac{1}{b^{1011}}$$

이라 할 때,  $a - b$ 의 값은? (단,  $a, b$ 는 자연수) (7점)

- ① 0    ② 1    ③ 2    ④ 3    ⑤ 4

29.  $\log_2 \left( \frac{2^{\sqrt{2}}}{a} \right) \times (\sqrt{2} + 1) = 1$ 을 만족시키는 양수  $a$ 의 값은? (7점)

- ①  $\frac{1}{2}$     ② 1    ③  $\frac{3}{2}$     ④ 2    ⑤  $\frac{5}{2}$

30. 삼각형 ABC의 세 변의 길이가  $\overline{AB} = 5$ ,  $\overline{AC} = 6$ ,  $\overline{BC} = 7$  일 때,  $\frac{1}{\cos A}$ 의 값은? (7점)

- ① 2      ② 3      ③ 4      ④ 5      ⑤ 6

31. 수열  $\{a_n\}$ 이

$$\sum_{k=1}^9 a_k = 10, \quad \sum_{k=1}^{10} a_k = 11$$

을 만족시킬 때,  $\sum_{k=1}^9 k(a_k - a_{k+1})$ 의 값은? (7점)

- ① 1      ② 2      ③ 3      ④ 4      ⑤ 5

32.  $f(x) = |x|$  이고,  $g(x)$ 를

모든 정수  $n$ 에 대하여 구간  $[n, n+1)$ 에서

$$g(x) = x - n$$

이라 정의하자. 아래 조건을 만족하는 실수  $a$ 의 개수는? (7점)

정의역이  $-5 < x < 5$ 인 합성함수  $(g \circ f)(x)$ 는  $x = a$ 에서 불연속이다.

- ① 5      ② 6      ③ 7      ④ 8      ⑤ 9

33. 집합  $A = \{1, 2, 3\}$ 에서 정의된 함수  $f: A \rightarrow A$ 가 두 조건

$$f(1) = 3, \quad (f \circ f)(x) = x$$

를 만족시킨다. 함수  $h(x) = (f \circ f \circ f)(x)$ 에 대하여  $(h \circ h \circ h \circ h)(2) \times h(3)$ 의 값은? (10점)

- ① 2      ② 3      ③ 4      ④ 6      ⑤ 9

34. 다항함수  $f(x)$ 는

$$\lim_{x \rightarrow 0} f(x) = 2, \quad \lim_{x \rightarrow \infty} \frac{f(x)}{x^n} = 1$$

을 만족시키고, 임의의 실수  $a$ 에 대하여

곡선  $y = f(x)$ 와 직선  $y = a$

가 오직 한 점에서 만난다. 옳은 것만을 보기에서 있는 대로 고른 것은? (단,  $n$ 은 자연수) (10점)

보기

ㄱ.  $n$ 은 짝수

ㄴ.  $\lim_{x \rightarrow 0} \frac{f(x) - 2}{x} \geq 0$

ㄷ.  $f(k) = 0$ 일 때  $k < 0$

- ① ㄱ      ② ㄴ      ③ ㄷ      ④ ㄱ, ㄴ      ⑤ ㄴ, ㄷ

35. 다항함수

$$f(x) = x^n + x^{n-1} + \cdots + x + 1 = 1 + \sum_{k=1}^n x^k$$

에 대하여 다음 조건을 모두 만족시키는 자연수  $n$ 의 값은? (10점)

가.  $\int_0^1 f(x) dx \geq 2$

나.  $\int_{-1}^1 f(x) dx \leq 3$

- ① 1      ② 2      ③ 3      ④ 4      ⑤ 5

**2024학년도 재외국민과 외국인 특별전형 필기고사 답안지**  
- 자연계열 -

과목			영어			과목			수학		
문제 번호			정답			문제 번호			정답		
			배점						배점		
1			②			21			①		
2			④			22			⑤		
3			⑤			23			②		
4			①			24			⑤		
5			①			25			④		
6			④			26			②		
7			③			27			③		
8			③			28			②		
9			②			29			④		
10			③			30			④		
11			①			31			①		
12			②			32			④		
13			⑤			33			①		
14			②			34			⑤		
15			⑤			35			③		
16			①								
17			④								
18			④								
19			⑤								
20			⑤								

각 5점

5점

7점

10점