

# 가톨릭대학교 2019학년도 편입학 영어, 수학 A형

(일반·학사·농어촌·특성화) 편입학

지원전공(학과) : \_\_\_\_\_

성명 : \_\_\_\_\_

수험번호 : \_\_\_\_\_

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**가톨릭대학교**  
THE CATHOLIC UNIVERSITY OF KOREA

2019학년도 가톨릭대학교 편입학 시험 문제지

영어, 수학 (A형)

[1-3] 빈칸에 들어갈 가장 적절한 표현을 고르시오.

1. A: I heard you've decided to exchange your bicycle with Jenny's TV.

B: Yes, instead of wasting money, we decided to \_\_\_\_\_ our stuff.

- ① barter                      ② diversify
- ③ liquidate                  ④ redeem

2. The film was not very impressive; its plot was predictable and the acting was \_\_\_\_\_.

- ① evocative                  ② impeccable
- ③ mediocre                  ④ whimsical

3. The expression "I'll do that in my copious free time" literally means the speaker has much free time in which to perform a task. However, it is often used \_\_\_\_\_, pointing out that the speaker really has no time in which to do it.

- ① deferentially              ② errantly
- ③ inadvertently              ④ sarcastically

[4-5] 빈칸에 들어갈 가장 적절한 표현을 고르시오.

4. A person with heat stroke has overheated to the point \_\_\_\_\_ the body is unable to cool itself: at this point, internal temperature may have risen to as high as 41°C and the sweating mechanism has ceased to function.

- ① that                          ② where
- ③ while                        ④ in which

5. The Kyoto Protocol is an ambitious effort to reduce CO<sub>2</sub> emissions \_\_\_\_\_ responsible for global warming.

- ① believe                      ② believed
- ③ believing                    ④ to believe

[6-10] 빈칸에 들어갈 가장 적절한 표현을 고르시오.

6. In 1939, when Einstein learned that scientists in Berlin had figured out how to split a uranium atom, he wrote a letter to President Roosevelt urging him to do whatever it took to make sure American scientists were the first to build an atomic bomb. In fact, Einstein was a committed pacifist, but the prospect of nuclear weapons in the hands of the Nazis was so terrifying that he later wrote, "I did not see any other way out." However, because of his left-wing political beliefs, the U.S. Army denied Einstein the security clearances he needed to be a part of the Manhattan Project, and so his role in the development of this deadly technology was \_\_\_\_\_.

- ① truly pivotal                      ② an indirect one
- ③ significantly expanded          ④ kept strictly confidential

7. Remember when you could fall asleep as soon as your head hit the pillow and not wake up until the alarm went off? As we get older, it becomes a little harder to fall asleep and stay asleep. But although our sleep patterns change, \_\_\_\_\_. Just like diet and exercise, a good night's sleep is essential for your good health, for keeping you alert and energetic, and for building your body's defenses against infection, chronic illness, and even heart disease.

- ① our need for sleep doesn't
- ② the quality of sleep doesn't
- ③ sleep cycle continues to repeat itself
- ④ the amount of sleep remains the same

8. Some well-known attitude researchers have asked the following questions: When is it best to stress factors central to the communication—such as the strength of the arguments—and when is it best to stress factors peripheral to the logic of the arguments, such as the credibility or attractiveness of the person delivering the speech? Findings from a good deal of research illustrate a general rule: When an issue is personally relevant, people pay attention to the arguments in a speech and will be persuaded to the extent that the arguments are sound. When an issue is not personally relevant, people pay less attention to the arguments. Instead, they will take a mental shortcut, following such peripheral rule as "\_\_\_\_\_."

- ① Prestigious speakers can be trusted
- ② Believe only what you see and hear
- ③ Negative attention is better than no attention at all
- ④ Don't waste your time on things that don't intrigue you

9. A standard motif in science fiction and UFO literature assumes extraterrestrials roughly as capable as we. Perhaps they have a different sort of spaceship or ray gun, but in battle—and science fiction loves to portray battles between civilizations—they and we are rather evenly matched. In fact, there is almost no chance that two galactic civilizations will interact at the same level. In any confrontation, one will always utterly dominate the other. If an advanced civilization were to arrive in our solar system, there would be nothing we could do about it. Their science and technology would be far beyond ours. It is pointless to worry about the possible malevolent intentions of an advanced civilization with whom we might make contact, since the mere fact they have survived so long means \_\_\_\_\_.

- ① they have engaged in serious interstellar exploration
- ② there would be a slim chance we could defeat them
- ③ they have already achieved enormous progress in science
- ④ they have learned to live among themselves and with others

10. Throughout their long history the whales evolved their extraordinary audio communication system. The finbacks, for example, emit extremely loud sounds at a frequency of twenty Hertz, down near the lowest octave on the piano keyboard. Such low-frequency sounds are scarcely absorbed in the ocean. The American biologist Roger Payne has calculated that using the deep ocean sound channel, two whales could communicate with each other at twenty Hertz essentially anywhere in the world. One might be off the Ross Ice Shelf in Antarctica and communicate with another in the Aleutians. For most of their history, the whales \_\_\_\_\_. Perhaps when separated by 15,000 kilometers, their vocalizations are love songs, cast hopefully into the vastness of the deep.

- ① have evolved into an exceptionally intelligent species
- ② may have established a global communication network
- ③ have protected themselves from predators by communicating effectively
- ④ may have developed the capability to deliver highly detailed information

[11-14] 다음 글을 읽고 물음에 답하시오.

11. Influenza is a constantly evolving virus. (A) It quickly goes through mutations that slightly alter the properties of its H and N antigens. (B) Due to these changes, acquiring immunity (either by getting sick or vaccinated) to an influenza subtype such as H1N1 one year will not

necessarily mean a person is immune to a slightly different virus circulating in subsequent years. (C) In other cases, however, the virus can undergo major changes to the antigens such that most people don't have an immunity to the new virus, resulting in pandemics. (D) This antigenic shift can occur if an influenza A subtype in an animal jumps directly into humans.

Q: Choose the best place for the following sentence.

But since the strain produced by this antigenic drift is still similar to older strains, the immune systems of some people will still recognize and properly respond to the virus.

- ① (A)
- ② (B)
- ③ (C)
- ④ (D)

12. Many Americans take at least one dietary supplement every day. By definition, a supplement presumably offers what we lack in our diet. A prescription is not needed to purchase supplements whose range of formulations is huge and expanding. One misconception people have is that supplements sold in the United States have been tested and approved by the Food and Drug Administration (FDA). However, a dietary supplement is categorized as a food, and not as a drug. In other words, manufacturers are not obliged to prove the safety or effectiveness of their product.

Q: Which of the following is true according to the passage?

- ① Supplements cannot be purchased without a doctor's prescription.
- ② The market for supplements has been shrinking in recent years.
- ③ The sales of supplements do not require FDA approval.
- ④ No guideline is available on whether a dietary supplement is a food or a drug.

13. The history of chocolate can be traced to the ancient Mayans. Mayans not only consumed chocolate, but they revered it. The Mayan written history mentions chocolate drinks being used in celebrations and to finalize important transactions. Despite chocolate's importance in Mayan culture, it wasn't reserved for the wealthy and powerful but readily available to almost everyone. In many Mayan households, chocolate was enjoyed with every meal. Mayan chocolate was thick and frothy and often combined with chili peppers, honey or water.

The Aztecs took chocolate admiration to another level. They believed cacao was given to them by their gods. Like the Mayans, they enjoyed the caffeinated kick of hot or cold, spiced chocolate beverages in ornate containers, but they also used cacao beans as currency to buy food and other goods. In Aztec culture, cacao beans were considered more valuable than gold. Aztec chocolate was mostly an upper-class extravagance, although the lower classes enjoyed it occasionally at weddings or other celebrations.

Q: Which of the following is NOT true according to the passage?

- ① In Maya, chocolate was consumed by people from all walks of life.
- ② Chocolate was considered divine in Aztec culture.
- ③ Chocolate beverages consumed in Maya and Aztec differed considerably.
- ④ The Aztecs used cacao beans as money.

14.



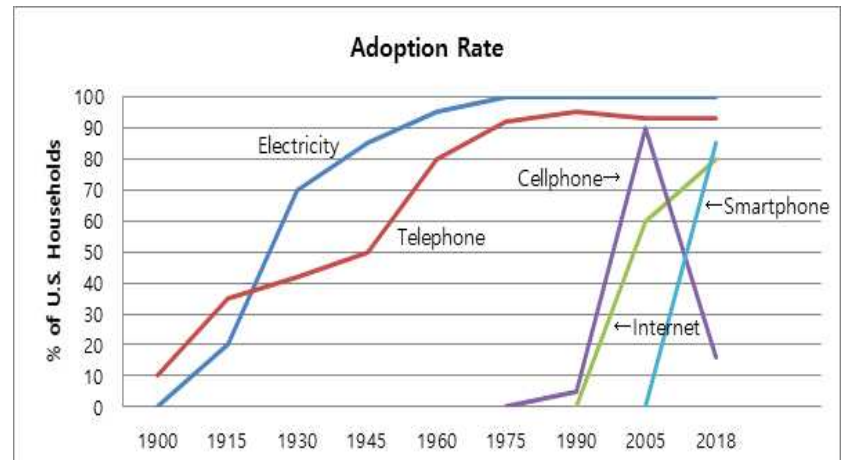
Q: What is the relationship between the writer and the recipient of the email?

- ① client - attorney
- ② claimant - social worker
- ③ customer - insurance company
- ④ patient - hospital administrator

[15-16] 다음 글을 읽고 물음에 답하십시오.

Many people suggest that rates of new product introduction and adoption are speeding up, but is it really across the board? The answer seems to be yes. An automobile industry trade consultant, for instance, observes that "Today, a typical automotive design cycle is approximately 24 to 36 months, which is much faster than the 60-month life cycle from five years ago." The chart below shows how long it took for various categories of product, from electricity to smartphones, to achieve different penetration levels in U.S. households. (A) While it took more than four decades for the telephone to reach 50% of households beginning before 1900, (B) it took less than five years for cellphones to accomplish the same

penetration. (C) Although it took 15 years for electricity to reach 20% adoption, (D) the Internet usage in U.S. households exceeded 50% during the same amount of time. As you can see from the chart, innovations introduced more recently are being adopted more quickly. By analogy, firms with competitive advantages in those areas will need to move faster to capture those opportunities that present themselves, as it is clear that in many areas things are indeed speeding up, with more players and fewer barriers to entry.



15. What is the best title for the passage?

- ① Tech's Late Bloomers in Action
- ② The Risk of Being an Early Adopter
- ③ Smart Technology's Head-Spinning Advancement
- ④ The Pace of Technology Adoption Is Speeding Up

16. Which of the following is NOT an accurate description of the graph?

- ① (A)
- ② (B)
- ③ (C)
- ④ (D)

[17-18] 다음 글을 읽고 물음에 답하십시오.

The wage gap is a statistical indicator often used as an index of the status of women's earnings relative to men's. It is also used to compare the earnings of other races and ethnicities to those of white males, a group generally not subject to race- or sex-based discrimination. The wage gap is expressed as a percentage (e.g., in 2012, women earned 80.9% as much as men aged 16 and over) and is calculated by dividing the median annual earnings for women by the median annual earnings for men.

The Equal Pay Act (EPA), which aims to promote gender equality in the workplace, was signed in 1963, making it illegal for employers to pay unequal wages to men and women who hold the same job and do the same work. (A) At the time of the EPA's passage, women earned just 58 cents for every dollar earned by men. (B) By 2011, that rate had increased to 82 cents. (C) African-American women earn just 69 cents to every dollar earned by white men, and for Hispanic women that figure drops to merely 60 cents per dollar. (D) Asian women are

the exception, earning 87 cents for every dollar earned by white men—a sum higher than women of all other races/ethnicities as well as African-American and Hispanic men.

17. Which of the following is NOT correct according to the passage?

- ① White males are not generally regarded as a disadvantaged group.
- ② EPA enforces equal pay across gender, race, and ethnicity.
- ③ Since 1963, the wage gap between the sexes has narrowed.
- ④ Asian women in the U.S. earn more than their caucasian counterparts.

18. Choose the best place for the following sentence.

Minority women fare the worst.

- ① (A)                      ② (B)                      ③ (C)                      ④ (D)

[19-20] 다음 글을 읽고 물음에 답하시오.

Over millennia, prolonged seasonal freezing of Lake Baikal has caused most of the lake's flora and fauna to adapt to life on and under the ice. Phytoplankton, microscopic organisms that live in fresh- or saltwater environments, are the basis of the lake's food web. Lake Baikal is the only lake in the world in which both the dominant primary producers (phytoplankton) and the top predator (the Baikal seal) require ice for reproduction.

Baikal's phytoplankton include green algae, which can grow explosively in "blooms" that may last days and weeks. Ice thickness and transparency determine the amount of light reaching the water, a critical factor for phytoplankton growth. Because these unique algae have adapted to specific under-ice conditions, recent changes in the ice, which was caused by warming air temperature, have decreased algae growth rates and slowed spring algal blooms. The effects of this decrease then move up the food chain, from the enormous quantities of tiny crustaceans that eat the algae to the fish that eat the crustaceans to the seals that depend on fish as their main food source.

The Baikal seal, smallest of the world's seals and the only species exclusively living in freshwater, mates and gives birth on the lake ice. The seals require ice in early spring for shelter. If ice melt occurs early, the seals are forced into the water, and the extra energy expended affects female fertility and nurturing ability.

19. According to the passage above, what is the best expression for the blank in the following sentence?

Recent changes in water temperature and ice over at Lake Baikal exemplify \_\_\_\_\_.

- ① that global warming may lead to beneficial changes in some areas around the globe
- ② that living things display remarkable resilience in the face of environmental changes
- ③ how flora and fauna can protect the freshwater environment from climate change
- ④ how changes in the atmosphere link to changes in the hydrosphere and biosphere

20. Which of the following is NOT true according to the passage?

- ① Ice at Lake Baikal creates a crucial environment for algae to reproduce.
- ② Recent warm weather caused an increase in phytoplankton living in Lake Baikal.
- ③ Among seals, the Baikal seal is a unique species living only in water that is not salty.
- ④ Premature ice melting reduces the Baikal seal's fertility.

21. 수열  $\{a_n\}$  이  $a_1 = 4, a_{n+1} = 5a_n + 4 (n = 1, 2, \dots)$ 를 만족할 때,  $a_{2019}$ 의 값은?

- ①  $5^{2018} - 1$                       ②  $5^{2018} + 1$                       ③  $5^{2019} - 1$                       ④  $5^{2019} + 1$

22. 함수  $y = \ln(x^2 - 2x + 1)$  위의 점  $(2, 0)$ 에서 접선의 방정식이  $y = ax + b$  일 때,  $a - b$ 의 값은?

- ① 5                      ② 6                      ③ 7                      ④ 8

23.  $-\frac{1}{2} \leq x \leq 0$  일 때, 곡선  $y = \ln(1-x^2)$ 의 길이는?

- ①  $\ln 2 - \frac{1}{2}$       ②  $\frac{1}{2}$       ③  $\frac{13}{24}$       ④  $\ln 3 - \frac{1}{2}$

24. 극한  $\lim_{x \rightarrow 1} \frac{x^{2019} + 2x - 3}{x - 1}$ 의 값은?

- ① 2019      ② 2020      ③ 2021      ④ 2022

25. 곡선  $r = 5 + 4\cos\theta$ 로 둘러싸인 부분의 넓이는?

- ①  $32\pi$       ②  $33\pi$       ③  $34\pi$       ④  $35\pi$

26. 공간에서의 세 점  $P(-1, -2, -1)$ ,  $Q(-4, -1, 1)$ ,  $R(2, 0, 3)$ 에 대하여 삼각형 PQR의 넓이는?

- ①  $\frac{7}{2}\sqrt{5}$       ②  $4\sqrt{5}$       ③  $\frac{9}{2}\sqrt{5}$       ④  $5\sqrt{5}$

27. 벡터함수  $\vec{r}(t) = (t, 2\cos t, 2\sin t)$ 로 주어진 곡선의 곡률이  $\kappa(t)$ 일 때,  $\kappa(5)$ 의 값은?

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

28. 임의의 실수  $x, y$ 에 대하여

$$(xy) \begin{pmatrix} a & 1 \\ 0 & b \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix}$$

의 값이 음이 아닐 때  $a^2 + b^2$ 의 최솟값은? (단,  $a, b$ 는 실수)

- ①  $\frac{1}{8}$       ②  $\frac{1}{6}$       ③  $\frac{1}{4}$       ④  $\frac{1}{2}$

29. 행렬  $A$ 에 대하여 다음 중 옳은 것을 모두 고르면?

- (㉠) 어떤 자연수  $n$ 에 대하여  $A^n = O$ 이면  $A$ 의 역행렬은 존재하지 않는다.  
 (㉡)  $A^2 - 4A + 3E = O$ 이면  $A = E$  또는  $A = 3E$ 이다.  
 (㉢)  $A = \begin{pmatrix} a & 2 \\ 3 & b \end{pmatrix}$ 이고  $ab < 0$ 이면  $A$ 는 역행렬을 가진다.

- ① (㉠), (㉡)                      ② (㉠), (㉢)  
 ③ (㉡), (㉢)                      ④ (㉠), (㉡), (㉢)

30. 양의 실수  $x$ 에 대하여 함수  $F(x), f(x)$ 는 다음 세 조건을 만족한다.

- (㉠)  $F'(x) = f(x)$   
 (㉡)  $F(x) = xf(x) + x \sin x + \cos x$   
 (㉢)  $f\left(\frac{\pi}{2}\right) = -1$

이때,  $f\left(\frac{\pi}{4}\right)$ 의 값은?

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

31. 연속함수  $f(x)$ 가  $f(x) + f(-x) = x^2 - 1$ 을 만족할 때,

$\int_{-1}^1 f(x)dx$ 의 값은?

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

32. 공간에서의 포물면  $z = 1 - x^2 - y^2$ ,  $z \geq -3$ 의 넓이는?

- ①  $\frac{\pi}{6}(17\sqrt{17}-1)$               ②  $\frac{\pi}{5}(17\sqrt{17}-1)$   
 ③  $\frac{\pi}{6}(65\sqrt{65}-1)$               ④  $\frac{\pi}{5}(65\sqrt{65}-1)$

33. 극한  $\lim_{n \rightarrow \infty} \frac{\{(1+2^n)(2+2^n)(3+2^n) \dots (2^n+2^n)\}^{\frac{1}{2^n}}}{2^n}$ 의 값은?

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

34. 원  $(x-2)^2 + y^2 = 4$ 의 내부와 원  $x^2 + y^2 = 4$ 의 외부인 영역의 넓이는?

- ①  $\frac{2}{3}\pi + 2\sqrt{3}$                       ②  $\frac{2}{3}\pi + 4\sqrt{3}$   
 ③  $\frac{4}{3}\pi + 2\sqrt{3}$                       ④  $\frac{4}{3}\pi + 4\sqrt{3}$

35. 최대공약수가 4인 세 자연수  $A, B, C$ 가 다음을 만족한다.

$$A \log_{392} 7 + B \log_{392} 2 = C$$

이때,  $A+B+C$ 의 값은?

- ① 6                      ② 12                      ③ 18                      ④ 24

36. 함수  $f(x)$ 가 모든 실수  $x$ 에 대하여  $f(x+2) = f(1-x)$ 를 만족하고, 방정식  $f(x) = 0$ 이 서로 다른 다섯개의 실근을 가질 때, 모든 근의 합은?

- ①  $-\frac{15}{2}$                       ②  $-\frac{5}{2}$                       ③  $\frac{5}{2}$                       ④  $\frac{15}{2}$

37. 방정식  $2(\sqrt{a} \cos x + \sqrt{1-a} \sin x) = \sqrt{3}$  이  $0 < x < \frac{\pi}{6}$ 에서 해를 갖도록 하는  $a$  값으로 적당한 것은?

- ①  $\frac{1}{6}$                       ②  $\frac{1}{5}$                       ③  $\frac{1}{4}$                       ④  $\frac{1}{3}$

38. 부등식  $x^2 + 2y^2 \leq 1$ 을 만족하는 실수  $x, y$ 에 대하여 함수  $f(x, y) = e^{-xy}$ 의 최댓값은?

- ① 1                      ②  $e^{\frac{1}{4}}$                       ③  $e^{\frac{1}{2\sqrt{2}}}$                       ④  $e^{\frac{1}{2}}$

39. 함수  $f(x) = 2x^2 - 6x + 3$ 에 대하여 방정식  $f(x) = 0$ 의 두 근을  $\alpha, \beta$ 라 할 때,  $\frac{\int_{\alpha}^{\beta} x f(x) dx}{\int_{\alpha}^{\beta} f(x) dx}$ 의 값은? (단,  $\alpha < \beta$ )

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

40.  $-\frac{\pi}{2} < x < \frac{\pi}{2}$ 인 실수에 대하여 함수  $f(x)$ 는 다음 두 조건을 만족한다.

$$\begin{aligned} (\neg) & f'(x) = \sin x - (\tan x)f(x) \\ (\sphericalangle) & f(0) = 1 \end{aligned}$$

이때,  $\lim_{x \rightarrow \frac{\pi}{2}^-} f(x)$ 의 값은?

- ①  $-\infty$                       ② -1                      ③ 0                      ④ 1