

# 가톨릭대학교 2020학년도 편입학 영어, 수학 A형

(일반·학사·농어촌·특성화) 편입학

모집단위(지원학과) : \_\_\_\_\_

성명 : \_\_\_\_\_

수험번호 : \_\_\_\_\_

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4. 문제유형을 정확하게 선택하십시오.



**가톨릭대학교**  
THE CATHOLIC UNIVERSITY OF KOREA

## 영어, 수학 (A형)

[1-3] 빈칸에 들어갈 가장 적절한 표현을 고르시오.

1. As vehicles become smarter and more connected to WiFi networks, hackers will have more opportunities to breach vehicle systems, which may make smart cars more \_\_\_\_\_ to cyberattacks.

- ① resilient                      ② immune
- ③ responsive                    ④ vulnerable

2. A tsunami, a series of ocean waves that sends surges of water, sometimes reaching heights of over 100 feet onto land, can cause widespread \_\_\_\_\_ when the waves crash ashore.

- ① void                            ② uproar
- ③ remorse                        ④ destruction

3. The availability of fake IDs on the Internet could \_\_\_\_\_ the efforts to stop underage drinking.

- ① mount                          ② applaud
- ③ duplicate                       ④ undermine

[4-5] 빈칸에 들어갈 가장 적절한 표현을 고르시오.

4. Stress \_\_\_\_\_ external influences, while anxiety is an internal response.

- ① is often caused by          ② is often causing
- ③ often causes                ④ would have caused

5. Cubism is an artistic movement, created by Pablo Picasso and Georges Braque, \_\_\_\_\_ geometric shapes in depictions of human and other forms.

- ① who employs                ② that employing
- ③ which employs              ④ where it is employed

[6-10] 빈칸에 들어갈 가장 적절한 표현을 고르시오.

6. From about 1830 to the end of the nineteenth century, French landscape painting was transformed. Previously, French artists had rarely painted the French countryside, and the academic tradition of historical landscape was firmly rooted in Italy. \_\_\_\_\_, the painters were newly inspired by their own place and time. Romanticism helped focus interest on nature, not simply as a backdrop for historical narrative, but as a subject worthy in and of

itself. In addition, a naturalist trend helped foster less idealized depictions that were honest portrayals of the real world.

- ① Additionally                ② Therefore
- ③ Likewise                      ④ However

7. Most people—about 85 to 90%—are right-handed, and there's no population on Earth where left-handers are in the majority. According to archeological research, righties have dominated for about 500,000 years. From an evolutionary perspective, if right-handedness evolved because it had some kind of advantage, then you might expect left-handers to disappear completely. But left-handers have \_\_\_\_\_. One leading theory to explain this is the fighting hypothesis. The idea underlying the theory is that in hand-to-hand combat, or in combat with weapons, there is an evolutionary advantage to being a left-hander. If you're left-handed, you have a surprise advantage because most people are used to fighting against right-handers. If that hypothesis is correct, it would mean that even though the downsides to left-handedness were significant enough to keep lefties in the minority, lefties' advantage in combat at least gave them a fighting chance against eventual extinction.

- ① maintained a constant minority
- ② been forced to use their right hands
- ③ indeed taken advantage of being ambidextrous
- ④ actually enjoyed more advantages than right-handers

8. In olden times, men of science \_\_\_\_\_. Galileo made his telescopes with his own hands. When Newton began his research in optics he was able himself to grind the lenses for his instruments and make the well-known telescope, which, for its time, was a fine piece of workmanship. Leibnitz was fond of inventing machines: Windmills and carriages to be moved without horses preoccupied his mind as much as mathematical and philosophical speculations. In short, with our great geniuses handicraft was no obstacle to abstract research—it rather favored them.

- ① worked with machines invented for them
- ② did not despise manual work and handicraft
- ③ had the benefit of collaborating with craftsman

④ found few opportunities for mastering the use of machines

9. What is new about the Nobel Peace Prize is that environmental work is now included in the peace concept. Several people have asked what the environment really has to do with Alfred Nobel's will. However, it is not difficult to link the two. Alfred Nobel's first criterion for the prize was "fraternity between nations." In my opinion, you would be hard pressed to find a clearer example of fraternity between nations than the attempts to save our planet from global warming. To do this, we all need to unite to achieve a common goal. Nobel's third criterion, "the holding of peace congresses," can in itself also be said to be met in the form of the extensive environmental diplomacy taking place on many levels to save our planet. As I see it, this is an excellent example of how the committee responds to modern challenges \_\_\_\_\_.

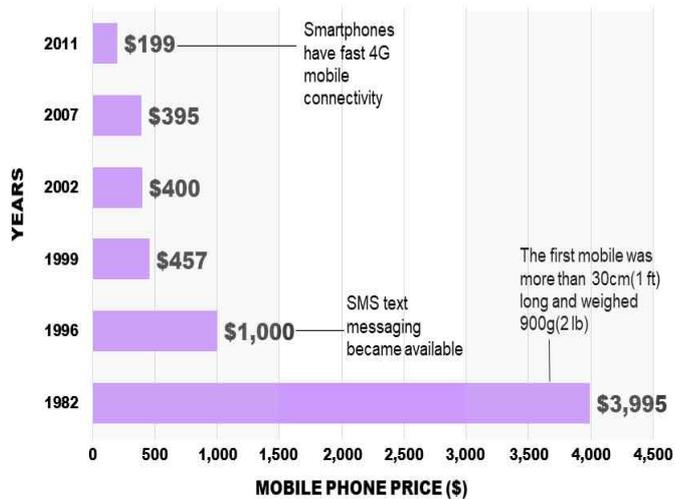
- ① while also remaining loyal to Nobel's will
- ② of keeping peace and solve disputes between nations
- ③ in ways that enhance environmental awareness among the public
- ④ as it dismisses the old notion of peace and articulates a new one

10. When scientists began collecting elements in the 1700s and 1800s, slowly identifying new ones over decades of research, they began to notice patterns and similarities in their physical properties. Some were gases, some were shiny metals, some reacted violently with water, and so on. At the time when elements were first being discovered, the structure of atoms was not known. Scientists began to look at ways to arrange them systematically so that similar properties could be grouped together, just as someone collecting seashells might try to organize them by shape or color. The task was made more difficult because not all of the elements were known. This left gaps, which made deciphering patterns a bit like \_\_\_\_\_. Different scientists came up with different types of tables. The first version of the current table is generally attributed to Russian chemistry professor Dmitri Mendeleev in 1869, with an updated version in 1871.

- ① trying to assemble a jigsaw puzzle with missing pieces
- ② creating works of art based solely on one's imagination
- ③ competing to invent a device under tight time restriction
- ④ working to reconstruct a destroyed artifact based on archives

[11-14] 다음 글을 읽고 물음에 답하시오.

11.



The first available mobile phones were out of reach for all but the very wealthy. (A) In 1982, for example, the average mobile phone amounted to almost \$4,000, though they were much larger and heavier than smartphones we use today. But prices rapidly fell with growing demand, and features increased with technological development, leading to the current success of the smartphone. (B) By 1996, the price had dropped by one third, and text messaging functionality became available. (C) Since then it only took three years for the price to fall by more than half, but from 1999 the price fall started to slow down. (D) In 2011, the average basic smartphone, with fast 4G mobile connectivity, only cost less than \$200.

Q: Which of the following is NOT an accurate description of the graph?

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

12. The horrific human toll exacted by terrorism is just part of the damage it causes to societies. There is the additional cost of increased security, diverting financial resources from positive social and environmental programs. Economic growth is affected by terrorist activities, as businesses experience uncertainty and face increased costs, such as that for insurance, while at the same time investors move funds to more stable areas. Nations affected by terrorism also experience the emigration of educated and talented people, further impacting on their development.

Q: What is the passage mainly about?

- ① the hidden costs of terrorism
- ② why terrorism does not work
- ③ how to counter terrorism threats
- ④ impacts of terrorism on human rights

13. Moderate wine consumption is a component of traditional Mediterranean diets, which research associates with lower rates of disease and mortality. Some research studies in the early 1990s found that people who drank wine, as opposed to beer, enjoyed lower mortality risks. Later work zeroed in on a group of compounds found in grapes, called polyphenols—and in particular, resveratrol—as the likeliest source of wine’s ostensible health benefits. Red wine, more so than white, is packed with resveratrol. And the belief that red wine is healthier than other alcoholic beverages took root. But beer may have gotten a bad rap. A 2006 study of grocery store purchases in Denmark found that people who bought wine also tended to buy more fruits, vegetables, and other healthy foods than people who bought beer. This study led to expert speculation that the average wine drinker may eat healthier than the average beer drinker. If true, that could explain away many of the health advantages associated with wine.

Q: What does the passage suggest?

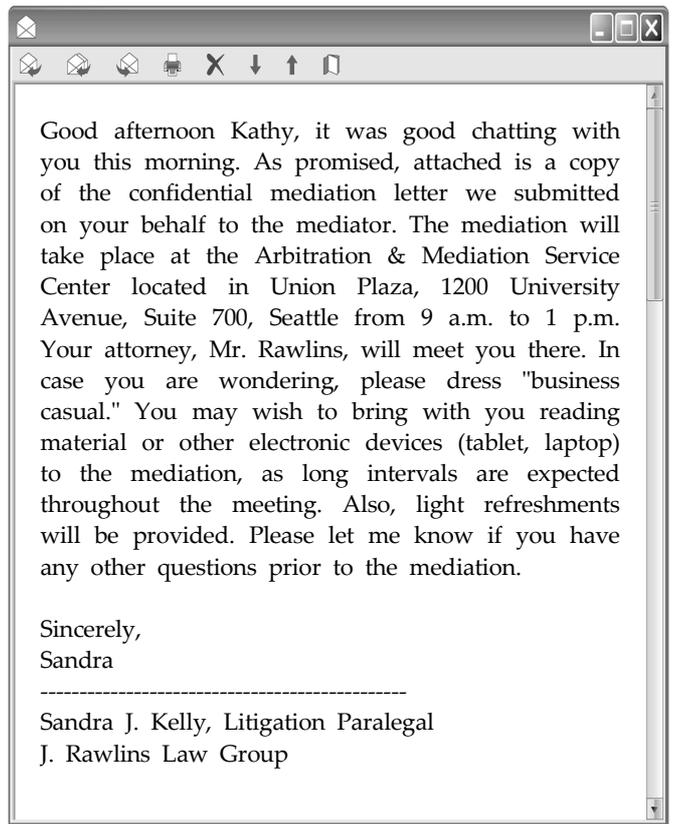
- ① Risks of alcohol consumption have been underestimated.
- ② Drinking patterns rather than alcohol type may matter more.
- ③ What may make wine drinkers healthier is their diet, not the beverage.
- ④ Beer and wine may equally benefit your health, but just in different ways.

14. According to a recent study with 27,000 older adults, nearly 10% were in the pre-dementia stage. Those who are in this category are twice as likely to develop dementia within 12 years compared to others. Testing for pre-dementia includes a simple test measuring how fast people walk and asking a few simple questions related to their cognitive abilities. The test does not require sophisticated medical technology and can be easily administered. The payoff for early diagnosis could be enormous for individuals as well as the society which stand to benefit by reducing healthcare costs.

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

- ① Early diagnosis of pre-dementia involves complex testing.
- ② Walking posture is one measure used to diagnose pre-dementia.
- ③ The pre-dementia diagnosis test does not rely on hi-tech devices.
- ④ People in the pre-dementia stage will all develop dementia within 12 years.

[15-16] 다음 글을 읽고 물음에 답하십시오.



15. What is the relationship between the sender and the recipient of the letter?

- ① legal office – client
- ② court office – mediator
- ③ plaintiff – defendant
- ④ prosecutor – the accused

16. Which of the following is true according to the passage?

- ① The attached letter is open to the public.
- ② The meeting is a formal event with a strict dress code.
- ③ The meeting is unlikely to involve intense non-stop discussions.
- ④ Food and drinks will not be provided at the meeting.



23. 두 수 1과 100 사이에 12개의 수  $a_1, a_2, \dots, a_{12}$ 를 넣어서 만든 수열  $1, a_1, a_2, \dots, a_{12}, 100$ 이 등차수열이 될 때,  $\sum_{k=1}^{12} a_k$ 의 값은?

- ① 303      ② 404      ③ 505      ④ 606

24. 함수  $f(x) = \frac{1}{\sqrt[3]{x^2+x+1}}$ 에 대하여  $f'(-1)$ 의 값은?

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

25. 두 함수  $f(x), g(x)$ 가 모든 실수  $x$ 에 대하여  $f'(x) = g'(x)$ 를 만족한다.  $f(1) = 2$ 일 때  $g(3) - g(1) - f(3)$ 의 값은?

- ① -2      ② -1      ③ 1      ④ 2

26. 극한  $\lim_{x \rightarrow \pi} \frac{1}{x - \pi} \int_x^\pi \frac{\cos(t)}{t} dt$ 의 값은?

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

27. 적분  $\int_0^\infty x e^{-x^2} dx$ 의 값은?

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

28. 실수부가  $a$ , 허수부가  $b$ 인 복소수  $z$ 에 대하여  $e^z = 1 + i\sqrt{2}$  라면,  $e^{2a}$ 의 값은? (단,  $i = \sqrt{-1}$ )

- ① 1      ② 2      ③ 3      ④ 4

29.  $2x + y = 1$ 을 만족하는 실수  $x, y$ 에 대하여 실수  $x', y'$ 은 다음을 만족한다.

$$\begin{pmatrix} x' \\ y' \end{pmatrix} = \begin{pmatrix} -2 & a \\ b & -1 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix}, \quad 2x' + y' = 1.$$

이때,  $a+b$ 의 값은?

- ① -1      ② 2      ③ 5      ④ 7

30.  $\sin\theta - \cos\theta = \frac{1}{3}$ 일 때,  $\tan^2 2\theta$ 의 값은?

- ①  $\frac{16}{65}$       ②  $\frac{17}{64}$       ③  $\frac{64}{17}$       ④  $\frac{65}{16}$

31. 두 집합 A, B가

$$A \cup B = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}, \quad A \cap B = \{4, 10\}$$

을 만족한다. A, B의 원소의 합을 각각  $S(A), S(B)$ 라고 할 때, 곱  $S(A) \times S(B)$ 의 최댓값은?

- ① 1122      ② 1190      ③ 1260      ④ 1332

32. 극한  $\lim_{x \rightarrow 0} (1 - \sin x)^{\frac{1}{x}}$ 의 값은?

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

33. 거듭제곱급수  $\sum_{n=0}^{\infty} \frac{(n!)^2}{(2n)!} x^n$ 의 수렴 반지름은?

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

34.  $x \geq 0$ 인 복소수  $z = x + i$ 에 대하여  $\left| \frac{z+1}{z-1} \right|$ 의 최댓값은?

(단,  $i = \sqrt{-1}$ )

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

35. 곡선  $r = 1 + \cos\theta$ 의 길이는? (단,  $0 < \theta < \frac{\pi}{2}$ )

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

36. 행렬  $A = \begin{pmatrix} 1 & 1 & 1 \\ 1 & 2 & 2 \\ 1 & 2 & 4 \end{pmatrix}$ 에 대하여 역행렬  $A^{-1}$ 의 행렬식의 값은?

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

37.  $\cos\left(\arcsin\left(\frac{3}{5}\right) + \arccos\left(\frac{4}{5}\right)\right)$ 의 값은?

- ①  $\frac{6}{25}$       ②  $\frac{7}{25}$       ③  $\frac{8}{25}$       ④  $\frac{9}{25}$

38.  $\sin\left(\frac{\pi}{2} + i \ln 2\right)$ 의 값은? (단,  $i = \sqrt{-1}$ )

- ① 1      ②  $\frac{3}{2}i$       ③  $\frac{5}{4}$       ④  $\frac{7}{6}i$

39.  $x(t)$ 가 미분방정식  $x' = 2(x^2 + 1)$ ,  $x\left(\frac{\pi}{8}\right) = 1$ 의 해일 때,  $x\left(\frac{\pi}{6}\right)$ 의 값은?

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

40.  $x(t)$ 가 미분방정식  $x'' + 2x' + x = 0$ ,  $x(0) = 1$ ,  $x'(0) = 0$ 의 해일 때,  $x(1)$ 의 값은?

- ①  $-2e$       ②  $-e$       ③  $e^{-1}$       ④  $2e^{-1}$