

# 가톨릭대학교 2021학년도 편입학 영어, 수학 A형

(일반·학사·농어촌) 편입학      모집단위(지원학과) : \_\_\_\_\_

성명 : \_\_\_\_\_      수험번호 : \_\_\_\_\_

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**가톨릭대학교**  
THE CATHOLIC UNIVERSITY OF KOREA



vicious circle, this year's smack or half-hour in his room can easily become next year's real spanking or hour locked in the closet.

- ① they tend to escalate
- ② there arises serious conflict
- ③ he doesn't understand what they mean
- ④ he hardly pays attention to them ultimately

10. The Opium Wars were two wars waged between the Qing dynasty and Western powers in the mid-19th century. The First Opium War, fought in 1839-1842 between the Qing and Great Britain, was triggered by the dynasty's campaign against the British merchants who sold opium to Chinese merchants. The British won the war because their opponent had no weapons that could compare to British guns. This war showed that a tiny nation like Britain could easily dictate terms to a huge nation like China simply because \_\_\_\_\_.

- ① it was more technologically advanced
- ② the war involved the issue of decolonization
- ③ its trading companies had global dominance
- ④ it had a clear goal of establishing colonial hegemony

[11-13] 다음 글을 읽고 물음에 답하시오.

11. The secret to *Beauty Korea's* success is technology management. Of the company's 683 employees 220(32%) are researchers. The company has become the first Korean cosmetics company to receive certification under the FDA's Current Good Manufacturing Practice guidelines. There's another secret to its success. When the company first started, it took 76 hours to test for microorganisms to determine whether a cosmetic product had spoiled, but now it takes only 24 hours to do so. No matter how loudly the contracting company asked for its products, *Beauty Korea* would only deliver products that had been tested fully. It's this upright subcontractor's spirit that made the company what it is today.

Q: What is the best title for the passage?

- ① From nothing to No. 1
- ② Confidence breeds success
- ③ Never compromise on quality
- ④ Aiming high in global market

12. Detroit police officer Robert Feld was fined \$300 and agreed to resign from the force. He had been charged for kicking a motorist and beating him with a pair of handcuffs. No contest plea by Feld means that he acknowledged overwhelming evidence even though he didn't admit guilt. Defense attorney Steven Fishman described his client's police career as distinguished but said the plea was in Feld's best interest. Authorities said Feld

stopped the motorist for suspicion of drunken driving, then kicked and struck him while making the arrest. The incident was captured by an in-car police video camera.

Q: According to the passage, which of the following is true?

- ① Feld's lawyer advised him that he should not resign from the force.
- ② Feld thought the motorist was drunken when stopping and arresting him.
- ③ Feld claimed that he didn't beat the motorist at all while making the arrest.
- ④ From the video camera, it became clear that the motorist actually drank and drove.

13. Three months after the disaster of the space shuttle *Columbia*, NASA chief Sean O'Keefe faced questions from Congress about the shuttle program's future. "While we investigate *Columbia*, longer range issues must be addressed: the future of the shuttle and its successor, an aging workforce and an aging infrastructure," Senator Paul Mikulski told O'Keefe at a Senate appropriations panel hearing. "Unfortunately, the administration's budget does not do enough to address some of these long-term needs." A few senators also said in a statement that NASA seemed to be vastly underfunded.

Q: What is the best title for the passage?

- ① The Shuttle Program Schedule Subject to Change
- ② NASA Admits They're Responsible for the Disaster
- ③ Congress Hardly Supports the New Shuttle Program
- ④ Senators Question NASA Boss on Scanty Budget

[14-15] 글의 흐름상 필요 없는 문장을 고르시오.

14. Plato's theory assumes that there are two realms: the physical realm and the spiritual realm. The former is the material stuff we see and interact with on a daily basis, while the latter exists beyond the physical realm. ① Plato calls the spiritual realm the Realm of Ideas or the Realm of Forms. ② It seems true that he inherited some of his theory from his mentor, Socrates. ③ The gist of Plato's theory is that the Forms are abstract, perfect, unchanging concepts or ideals that transcend time and space. ④ Even though the Forms are abstract, that does not mean that they are not real; in fact, the Forms are more real than any individual objects in the physical realm.

15. People act in a certain way repeatedly and this forms culture. Culture is often shaped by years of experience in a given ecology. ① Culture is often invisible, hidden deep in the heart and mind of its people. ② The geographic vastness of the United States has led to the development of freeways and the auto industry, with little emphasis on public transportation. ③ The mountainous nature of many countries, such as Nepal, has led them to develop air transportation to connect the remote areas simply because building highways was simply impossible. ④ In the Netherlands, people have developed a complex system of canals to take advantage of their natural condition as it is below sea level.

[16-17] 다음 글을 읽고 물음에 답하시오.

Behaviorism has purported to develop a scientific account of behavior and its acquisition. According to the theory, behavior can be accounted for strictly in terms of stimuli coming from environment and the responses coming from the organism under study. The organism itself was treated like a blackbox, whose internal structure was deemed unfit for proper scientific inquiry. For Behaviorism, the inner workings of the mind or brain were the philosopher's fiction. Science had to proceed on the basis of a rigid scientific method that admitted of no "hidden," "abstract" entities. The model to understand behavior was Pavlov, and his famous experiments with dogs.

Behaviorism could generalize to any sort of behavior, and to any animal. For language acquisition, the basic idea seems to be that a child would acquire his vocabulary by learning to say "book," for instance, in the presence of a book-stimulus in the environment.

But we feel something lacking about such an explanation by Behaviorism: Their study of language reveals nothing about the human mind, as it concentrates exclusively on \_\_\_\_\_. Nothing has been said about the inborn structure that must surely be present to account for the very possibility of behavior.

16. Fill in the blank with the best expression.

- ① organisms
- ② experiments
- ③ the behavior
- ④ the environment

17. What is the implication of the passage?

- ① The inner workings of the human mind should be taken into account in the research of human language acquisition
- ② Ultimately the phenomenon of language acquisition must be accounted for within the framework of Behaviorism.

③ The concept of "environment" in Behaviorism should be enriched to deal with language acquisition phenomena properly.

④ Hidden or abstract entities cannot be crucial factors when we study the correlation between the stimuli and the responses.

[18-20] 다음 글을 읽고 물음에 답하시오.

The earth's motion has two components. It *rotates* on its axis, the imaginary line about which the earth is spinning, and it *revolves* around the sun in its orbit. As for the earth's rotation, there are lots of evidence and arguments. The sun, planets, and stars rise in the east and set in the west because the earth rotates. Also observers in the Northern Hemisphere can see that the northern stars move counterclockwise in circles centered on the North Star. These observations, however, could be explained not only by a rotating earth but also by a stationary earth with a moving sky. Hence, we need stronger arguments such as the following.

First, the earth is not exactly spherical; the distance through the earth at its equator is 12,756 km while the distance from one pole to the other is only 12,713 km. So the earth has a bulging shape, and scientists explain it by using the idea of *inertia*, the tendency of moving matter to continue moving in the same direction. If the matter making up the planet were not held in place by the planet's gravity, it would fly out from the rotating planet, like mud from a spinning wheel. The earth's surface is moving fastest at its equator where its matter bulges out against the inward pull of gravity. Hence the bulge at the equator results.

Another piece of evidence comes from the earth's wind patterns. If the earth were not spinning but it retained the same atmospheric heat distribution, the wind patterns would be much simpler; the heated air at the equator would move toward the poles, and the cold air from the higher latitudes would move back toward the equator. The motion would be straight north and south. However, we actually observe a curved wind pattern because the earth's rotation deflects the wind.

Finally, we know by direct observation that the earth is rotating: Astronauts on the moon saw the earth's entire surface in each twenty-four-hour day. The moon does not revolve around the earth once each day. Therefore, \_\_\_\_\_.

18. Fill in the blank with the best expression.

- ① the earth must be rotating
- ② other planets must not be revolving, either
- ③ the earth not only rotates but also revolves
- ④ the reports from the astronauts should be revised

19. What is the best title for the passage?

- ① The Distinction between Rotation and Revolution
- ② Evidence for the Earth's Rotation
- ③ Methods of Astronomical Observations
- ④ The Interaction between Inertia and Gravity on Earth

20. Which of the following is the undeniable argument for the earth's rotation?

- ① The sun and stars rise in the east and set in the west.
- ② The earth's wind patterns are not straight but curved.
- ③ The northern stars move counterclockwise in circles centered on Polaris.
- ④ The distance from one pole to the other is equivalent to the distance through the earth at the equator.

21. 분침과 시침으로 이루어진 시계에서 하루 동안 시침과 분침이 직각을 이루는 횟수는?

- ① 36            ② 40            ③ 44            ④ 48

22. 행렬  $\begin{pmatrix} a & b \\ -\frac{1}{3} & a \end{pmatrix}$  의 역행렬이  $\begin{pmatrix} a & -\frac{1}{3} \\ b & a \end{pmatrix}$  일 때,  $\frac{a}{b}$  의 값은?  
(단,  $a > 0$ )

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

23.  $x$ 에 대한 방정식  $|x^2 - 5| = a$ 의 서로 다른 네 실근이 등차수열을 이룰 때, 모든 근의 곱은?

- ①  $\frac{9}{16}$             ②  $\frac{16}{9}$             ③ 9            ④ 16

24. 수열  $\{a_n\}$ 에서  $a_n$ 을  $3^n - \frac{7}{3^n}$  과  $3^{n+1} - \frac{7}{3^{n+1}}$  사이에 있는 자연수의 개수라 할 때,  $\sum_{n=1}^{\infty} \frac{24}{a_n}$ 의 값은?

- ① 5            ② 6            ③ 7            ④ 8

25. 함수  $f(x) = \{\log_2(\sin 2x + 2)\}^2$ 에 대하여  $f'(0)$ 의 값은?

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

26. 함수

$$f(x) = \lim_{n \rightarrow \infty} \frac{x^{2n-1} - 1}{x^{2n} + 1}$$

은  $x = a$ 에서 연속이지만 미분가능하지 않다. 이때, 상수  $a$ 의 값은?

- ① -2      ② -1      ③ 1      ④ 2

27. 한 모서리의 길이가  $x$ 이고 나머지 모서리의 길이가 모두 2인 사면체의 부피를 최대화 하는  $x$ 의 값은?

- ① 1      ②  $\sqrt{2}$       ③  $\sqrt{3}$       ④  $\sqrt{6}$

28. 두 수  $x, y$ 가  $xy = e$ ,  $\frac{1}{e} \leq x \leq e$ 일 때, 함수

$$f(x) = 2(\ln x)^3 - 3(\ln y)^2 - 6\ln x + 3$$

의 최댓값과 최솟값의 합은?

- ① -7      ② -5      ③ -3      ④ -1

29. 절댓값이 같은 두 복소수  $z_1, z_2$ 에 대하여  $\left| \frac{z_1}{z_2} - \frac{\bar{z}_2}{z_1} \right|$

의 최댓값은? (단  $\bar{z}$ 는  $z$ 의 켈레복소수)

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

30.  $O = \begin{pmatrix} 0 & 0 \\ 0 & 0 \end{pmatrix}$ ,  $E = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$ ,  $A = \begin{pmatrix} \cos \theta & -\sin \theta \\ \sin \theta & \cos \theta \end{pmatrix}$ 일 때,

$E + A + A^2 + A^3 + \dots + A^{14} = O$ 를 만족시키는  $\theta$ 의 값으로 적당한 것은?

- ①  $60^\circ$       ②  $90^\circ$       ③  $120^\circ$       ④  $150^\circ$

31. 극한  $\lim_{n \rightarrow \infty} \frac{(1^2 + 2^2 + \dots + n^2)(1^3 + 2^3 + \dots + n^3)}{(1 + 2 + \dots + n)(1^4 + 2^4 + \dots + n^4)}$ 의 값은?

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

32. 한 평면 위에 있는 서로 다른 네 점 A, B, C, P에 대하여  $\overrightarrow{AP} + \frac{3}{4}\overrightarrow{BP} + \overrightarrow{CP} = \vec{0}$  이고

$$\triangle ABC : \triangle ABP : \triangle ACP = m : n : 3$$

이다. 이때,  $m$ 을  $n$ 로 나눈 나머지는?

- ① 1      ② 2      ③ 3      ④ 4

33. 함수  $f(x) = \int_0^x e^{2t}(x^3 - t^3)dt$ 에 대하여  $\lim_{x \rightarrow 0} \frac{f'(x)}{x^3}$ 의 값은?

- ① 3      ② 4      ③ 5      ④ 6

34. 함수  $y = e^{2x} + x$ 의  $x=0$ 에서의 선형근사식을  $y = f(x)$ 라고 할 때,  $f(2)$ 의 값은?

- ① 1      ② 3      ③ 5      ④ 7

35. 좌표공간 위의 곡선

$$r(t) = (2 \cos t, 2 \sin t, t) \quad (0 \leq t \leq 2\pi)$$

에 대하여  $x \geq 0$ 인 부분의 길이의 합은?

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

36. 원  $x^2 + (y-4)^2 = 4$ 를  $x$ 축으로 회전하여 생기는 입체의 표면적은?

- ①  $16\pi^2$       ②  $24\pi^2$       ③  $32\pi^2$       ④  $40\pi^2$

37. 급수  $\sum_{n=1}^{\infty} \frac{\cos(n\pi)}{n5^n} (3-x)^{2n}$ 의 수렴구간은?

- ①  $3 - \sqrt{5} < x < 3 + \sqrt{5}$       ②  $3 - \sqrt{5} < x \leq 3 + \sqrt{5}$   
 ③  $3 - \sqrt{5} \leq x < 3 + \sqrt{5}$       ④  $3 - \sqrt{5} \leq x \leq 3 + \sqrt{5}$

38. 함수

$$f(x, y) = \begin{cases} \frac{a(x+y)}{x^3} & 0 \leq y \leq 1, 1 \leq x < \infty \\ 0 & \text{그밖의 } x, y \end{cases}$$

가  $\int_{-\infty}^{\infty} \int_{-\infty}^{\infty} f(x, y) dx dy = 5$  를 만족할 때,  $a$  의 값은?

- ① 1      ② 2      ③ 3      ④ 4

39. 미분방정식

$$y'' + 4y = 3 \sin t, \quad y(0) = 2, \quad y'(0) = -1$$

을 만족하는  $y$  에 대하여  $y\left(\frac{\pi}{2}\right)$  의 값은?

- ① -2      ② -1      ③ 0      ④ 1

40. 좌표공간 위의 곡선

$$X(t) = (2 \sin t, \cos t, \sin 2t) \quad \left(0 \leq t \leq \frac{\pi}{2}\right)$$

에 대하여 선적분  $\int_X 2x e^z dx + \sin z dy + (x^2 e^z + y \cos z) dz$  의 값은?

- ① 1      ② 2      ③ 3      ④ 4