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지원학과/전공	수험번호	성명

< 영어 >

■ [1-2] Identify the **LEAST** acceptable expression underlined in each passage below.

1. Critical reflection provides a lens ㉠ which to filter, examine, and consider analytical and spiritual responses ㉡ to trauma. ㉢ By spiritual, I mean the ability to ㉣ draw upon the power of culture, rituals and faith in order to consistently act ㉤ from a place of humility, and love. [2점]

2. ㉠ Having been run out of lemons, an improvising chef will ㉡ reach for a lime knowing that citrus fruit ㉢ will work better in the recipe than, say, a banana, much as an improvising musician ㉣ knows that a chord with a similar harmonic function will work better than ㉤ one with a different function. [1점]

■ [3-4] Choose the answer that has the closest meaning to the word underlined in each sentence below.

3. Congress refused to pass the bill that would implement tax reforms. [1점]

- ㉠ prevent
- ㉡ muster
- ㉢ tolerate
- ㉣ achieve
- ㉤ evolve

4. If deployed in the right way, communication networks enable employees to gain greater awareness of the organization. [1점]

- ㉠ abolished
- ㉡ contended
- ㉢ evaded
- ㉣ removed
- ㉤ used

■ [5-8] Complete each passage with the best expression.

5. Most offices, by the very nature of their structure and function, are geared to stability or slow change. Accelerated change of the kind that a computer brings is likely to prove disrupting and disturbing. This is because people in stable organizations tend to expect a steady continuation of existing arrangements, and because departments unaccustomed to change frequently find they have become too () it without stress. [2점]

- ㉠ busy to arrange
- ㉡ consistent to protect
- ㉢ inflexible to assimilate
- ㉣ puzzled to solve
- ㉤ stubborn to eliminate

6. Anyone who has looked at a world map must

have noticed how snugly the coastline of Africa and the Americas could be made to fit together, if the intervening ocean were removed. Modern geophysics has established that all of the Earth's landmasses were indeed joined together in one supercontinent, Pangaea, hundreds of millions of years ago, and that this supercontinent was broken apart, with the land masses () to their present positions on the globe. [2점]

- Ⓐ condoning
- Ⓑ drifting
- Ⓒ increasing
- Ⓓ losing
- Ⓔ zooming

7. When you're creating a new product, the actual thing you're building is only one tiny part of a vast, intangible, overlooked user journey that starts long before a customer ever gets their hands on your product and ends long after. Prototype as much of the full customer experience as possible. Make the intangible tangible so you can't overlook the less showy but incredibly important parts of the journey. You should be able to () exactly how a customer discovers, considers, installs, uses, fixes, and even returns your product. It all matters. [3점]

- Ⓐ bring forward and scramble
- Ⓑ capitalize on and invest
- Ⓒ map out and visualize
- Ⓓ plug in and connect
- Ⓔ sketch up and obliterate

8. In a particularly intriguing experiment conducted by Pascual Leone and his research group in 1995, three groups of adult human volunteers, none of whom could play the piano, volunteered for a five-day experiment. The control group, those exposed to the environment but not to the all-important factor under observation, merely stared at a piano. A second group learned five-finger piano exercises, and even over five days showed an astonishing change in their brain scans. However, there was a third group that was more remarkable still; in this group the subjects were required merely to imagine they were playing the piano, and their brain scans showed almost identical changes to those undergoing () practice. [2점]

- Ⓐ emotional
- Ⓑ mental
- Ⓒ physical
- Ⓓ surgical
- Ⓔ terminal

■ [9-20] Read each passage below and answer the questions that follow.

The flow of discoveries and inventions from other cultures and territories catalyzed the revival of science in Renaissance Europe. In astronomy, the rediscovery of Ptolemy's original texts would eventually lead Polish astronomer Nicolaus Copernicus to revolutionize the view of the cosmos, with the shocking revelation that the earth is not the centre of the universe. Copernicus published his theory of a heliocentric system in 1543, identifying the sun as the centre of the universe, with the earth and the other planets bound to move around it. Although the heliocentric view described planetary motions in a simpler and more orderly fashion than Ptolemy's geocentric system, it would take at least a century before this controversial model became accepted both within and beyond the scientific community. Even one of astronomy's great minds, Tycho Brahe, rejected heliocentrism. However, from his base in Denmark, Brahe made great strides in observational astronomy. On the island of Hven, which is located in present-day Sweden, Brahe built Uraniborg, the greatest astronomical observatory before the invention of the telescope. With the aid of large quadrants and sextants, he compiled a catalogue with the positions of about 1000 stars. Completed in 1598 and published in 1627, Brahe's catalogue has a precision of about one arc minute — a huge leap forward, and the first major improvement on stellar catalogues that stretched back seventeen centuries.

9. Nicolaus Copernicus revealed that _____. [1점]

- Ⓐ all ancient astronomers were right
- Ⓑ the earth travels around the sun
- Ⓒ his formulas were flawed
- Ⓓ the sun is not the centre of the universe
- Ⓔ Ptolemy's geocentric system is perfect

10. Tycho Brahe created a catalogue of star locations using _____. [2점]

- Ⓐ homemade instruments
- Ⓑ microscopes
- Ⓒ ancient astronomers' tables

- Ⓓ telescopes
- Ⓔ quadrants and sextants

11. According to the passage, which of the following is true? [2점]

- Ⓐ Discoveries and creations originating from different societies and areas hindered science from reviving in Renaissance Europe.
- Ⓑ Copernicus opposed to the church's geocentric view.
- Ⓒ Copernicus' heliocentric view was readily accepted both inside and outside of the scientific community.
- Ⓓ The precision of Tycho Brahe's catalogue is roughly one arc minute.
- Ⓔ Tycho Brahe's star catalogue was completed seventeen centuries ago.

Brenda Linson never goes anywhere without an empty spectacles case. It is as vital to her as her purse. Yet, she doesn't wear glasses. The reason she can't do without it is because she can't read and she can't write. If ever she gets into any situation where she might be expected to do either of these things, she fishes in her bag for the specs case, finds it empty, and asks the person concerned to do the reading for her. Brenda is now in her late thirties. She's capable and articulate and until a few months ago hardly anybody knew she was illiterate. Her husband didn't know and her children didn't know. Her children still don't. She had any number of tactics for concealing her difficulty — for example, never lingering near a phone at work, in case she had to answer it and might be required to write something down. But, in fact, it is easier for illiterates to conceal the truth than the rest of us might imagine. Literacy is taken so much for granted that people simply don't spot the ____ (A) ____ signs. It has never occurred to the children that their mother cannot read. She doesn't read them stories, but then their father doesn't either, so they find nothing surprising in the fact. Similarly they just accept that Dad is the one who writes sick notes and reads the school reports. Now that the elder boy Tom is a quite proficient reader, Brenda can skillfully get him to read any notes brought home from school simply by asking, "What's that all about, then?"

12. What is the best title of the above passage? [3점]

- Ⓐ The Past that a Woman Tried to Develop Personally
- Ⓑ Welcome to the Family and Enjoy the Lifestyle
- Ⓒ Why Adults Cannot Read or Write
- Ⓓ The Secret Few People Could Guess
- Ⓔ Living Life with Fun and Pleasure

13. According to the passage, which of the following is true? [3점]

- Ⓐ Linson often forgets carrying a spectacles case in her bag.
- Ⓑ We generally presume that other people can read or write.
- Ⓒ Linson was willing to answer a phone and wrote something down.
- Ⓓ Linson's husband regularly reads their children bedtime stories.
- Ⓔ Linson's elder son knew that his mother was illiterate.

14. Choose one that best fits into the underlined (A). [2점]

- Ⓐ giveaway Ⓑ holdout Ⓒ layoff
- Ⓓ show-off Ⓔ take-out

The main argument against conserved foods is not that the canning of food makes it taste different; rather, people complain that the recipes which the canning chefs dream up are tedious or tasteless when it is eaten in great quantities. And a company like Heinz can only produce something if it is going to be eaten in great quantities. The tomato is very pleasant to eat when it is freshly picked. A regular diet of tomatoes alone could well prove tedious. The canning companies try to cook the tomato in as many ways as possible. The Heinz factories in Britain use millions and millions of tomatoes every year. They claim that if all the tomatoes were loaded on to 15-ton lorries, the line of lorries would stretch for 60 miles. But there are many people who do not like to eat food out of season. They like their food to be fresh, and they like to cook it themselves in "the old-fashioned way". But it is very difficult for modern man to realize what it is like to live without the advantages of pre-packaged and canned food. European society in its present form could not cope without modern methods of food processing. Imagine your local supermarket without all the cans of pre-packaged foods. There wouldn't be much variety left, and what was left would have to be increased enormously in order to give the same amount of food. The supermarket would

turn into a chaos of rotting vegetables, stale bread and unhealthy meat. The health problems would be insurmountable, _____ (A) _____ we all went into the country to support ourselves.

15. What is the main purpose of this article? [2점]
- Ⓐ to complain about the tastes of conserved foods
 - Ⓑ to highlight the advantages of canned foods
 - Ⓒ to demonstrate how to use a can to pre-package food
 - Ⓓ to advertize the multiple recipes of canning companies
 - Ⓔ to change the common eating habits of tomatoes
16. According to the passage, which of the following is NOT true? [3점]
- Ⓐ Food tastes different when it's canned.
 - Ⓑ When consumed in large quantities, the foods that canning chefs create become bland.
 - Ⓒ The tomato tastes good when it is naturally picked.
 - Ⓓ Manufacturing pre-packaged foods has aggravated the local supermarket business.
 - Ⓔ European society benefits from modern methods of food processing.
17. Choose one that best fits into the underlined (A). [2점]
- Ⓐ as long as Ⓑ because Ⓒ provided that
 - Ⓓ though Ⓔ unless

The ethics of artificial intelligence is sometimes divided into a concern with the moral behavior of humans as they design, make, use and treat artificially intelligent systems, and a concern with the behavior of machines in machine ethics. As AI technology spreads fast and becomes integral to most of our daily lives, organizations are developing AI codes of ethics. The goal is to guide and develop the industry's best practices to guide AI development with "ethics, fairness and industry." However, as wonderful and moral as it seems on paper, most of these guidelines and frameworks are difficult to apply. In addition, they seem to be isolated principles situated in industries that generally lack ethical morals and mostly serve corporate agendas. Many experts and prominent voices argue that AI ethics are largely useless, lacking meaning and coherence. The most common AI principles are beneficence, autonomy, justice,

applicability, and non-maleficence. But, as Luke Munn at Western Sydney University explains, these terms overlap and often shift significantly depending on the context. He even states that "terms like 'beneficence' and 'justice' can simply be defined in ways that suit, conforming to product features and business goals that have already been decided." In other words, corporations could claim they adhere to such principles according to their own definition without truly engaging with them to any degree. Authors Resseguier and Rodrigues affirm that AI ethics remain (A) toothless because ethics is being used in place of regulation.

18. What is the best title of the above passage? [2점]
- Ⓐ The Dangers of AI
 - Ⓑ ChatGPT Is No Different
 - Ⓒ The Ethical Challenges of AI
 - Ⓓ We Won't Be Able to Spot Fake Expertise
 - Ⓔ Who's Running and Controlling AI Systems?
19. According to the passage, which of the following is NOT true of most principles in AI ethics that organizations are developing? [3점]
- Ⓐ Industries and corporations truly obey and comply with them.
 - Ⓑ They are mostly short on meaning and coherence.
 - Ⓒ They overlap with each other and their interpretations are context-dependent.
 - Ⓓ They are often defined in ways that adhere to product features and existing business goals.
 - Ⓔ Corporations stand by them on their own definition.
20. The underlined word (A) "toothless" means _____. [1점]
- Ⓐ moderate Ⓑ palpable Ⓒ reticent
 - Ⓓ spontaneous Ⓔ unenforced

< 수학 >

*문제풀이는 문제사이의 여백을 이용할 것.

1. 곡선 $y^2 + x^2y + \sin(xy) = 1$ 위의 점 $(0,1)$ 에서의 접선이 x 축과 만나는 점의 x 좌표는? [2점]

- ① 1 ② 2 ③ 3 ④ 4 ⑤ 5

2. 함수 $f(x) = \int_1^x \sqrt{2+t^2} dt$ 일 때, 역함수의 미분값 $(f^{-1})'(0)$ 은? [3점]

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

3. 함수 $f(x) = \frac{x}{2+x^2}$ 의 최댓값을 M 과 최솟값을 m 이라고 할 때 $M-m$ 의 값은? [2점]

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

4. 함수 $x = t^2 + 1$, $y = \cos t$ 일 때, $t = \pi$ 에서 $\frac{d^2y}{dx^2}$ 의 값은? [3점]

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

5. 좌표공간에서 주어진 영역 $x^2 + 3y^2 + 3z^2 \leq 3$, $z \geq 0$ 의 내부에 포함되어 있는 직육면체의 최대 부피는? [4점]

- ① $\frac{2}{3}$ ② $\frac{4}{3}$ ③ $\frac{6}{3}$ ④ $\frac{8}{3}$ ⑤ $\frac{12}{3}$

6. 점 $(1,1)$ 에서 벡터 $(1,1)$ 방향으로의 2변수 함수 $f(x,y)$ 의 방향도함수값은 $\sqrt{2}$ 이고, 벡터 $(1,2)$ 방향으로의 방향도함수값은 $\frac{1}{\sqrt{5}}$ 이다. 이때 $f(x,y)$ 의 방향도함수값이 최대가 되는 방향은? [3점]

- ① $\left(\frac{-1}{\sqrt{2}}, \frac{1}{\sqrt{2}}\right)$ ② $\left(\frac{-2}{\sqrt{5}}, \frac{1}{\sqrt{5}}\right)$
 ③ $\left(\frac{2}{\sqrt{5}}, \frac{-1}{\sqrt{5}}\right)$ ④ $\left(\frac{-1}{\sqrt{10}}, \frac{3}{\sqrt{10}}\right)$
 ⑤ $\left(\frac{3}{\sqrt{10}}, \frac{-1}{\sqrt{10}}\right)$

7. 함수 $f(x) = \int_x^{x^2+1} t^2 e^{t^2} dt$ 에 대하여 $f'(1)$ 의 값은? [3점]

- ① $2e^2 - e$ ② $4e^2 - e$
 ③ $2e^4 - e$ ④ $4e^4 - e$
 ⑤ $8e^4 - e$

8. 극한 $\lim_{n \rightarrow \infty} \sum_{k=0}^{n-1} \frac{k}{n^2} \sin\left(\frac{k}{n}\right)$ 의 값은? [2점]

- ① $\cos 1$ ② $\sin 1$
 ③ $\sin 1 + \cos 1$ ④ $2\sin 1 - 1$
 ⑤ $\sin 1 - \cos 1$

9. 포물선 $y^2 = 2x$ 와 직선 $y = x$ 로 둘러싸인 영역을 y 축으로 회전하여 얻은 입체의 부피는? [3점]

- ① $\frac{15}{16}\pi$ ② $\frac{16}{15}\pi$ ③ π ④ $\frac{14}{15}\pi$ ⑤ $\frac{15}{14}\pi$

10. 다음 급수 중 수렴하는 것을 모두 고르시오. [2점]

가. $\sum_{n=2}^{\infty} \frac{1}{n \log n}$ 나. $\sum_{n=2}^{\infty} \frac{1}{n (\log n)^2}$ 다. $\sum_{n=2}^{\infty} \frac{\log n}{n^2}$

- ① 가, 나, 다 ② 가, 다
 ③ 나, 다 ④ 나
 ⑤ 다

11. 적분 $\int_0^1 \frac{x}{(x-3)^2} dx$ 의 값은? [3점]

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

12. 좌표공간에 부등식 $\sqrt{x^2+y^2} \leq z$ 와 $x^2+y^2+z^2 \leq 1$ 을 만족하는 입체영역 D 에 밀도함수 $\rho(x,y,z)=z$ 가 주어질 때, 영역 D 의 무게중심 $(0,0,\alpha)$ 의 α 값은?
[4점]

- ① $\frac{2}{15}(4-\sqrt{2})$ ② $\frac{4}{15}(4-\sqrt{2})$
 ③ $\frac{6}{15}(4-\sqrt{2})$ ④ $\frac{8}{15}(4-\sqrt{2})$
 ⑤ $\frac{2}{3}(4-\sqrt{2})$

13. 곡선 $y=e^x$, $y=e^x+1$, $y=1-e^x$, $y=2-e^x$ 으로 둘러싸인 영역 R 에서 $\iint_R \frac{2e^x}{y+e^x} dx dy$ 의 값은? [4점]

- ① $\ln 2$ ② $\ln 3$ ③ $\ln 4$ ④ $\ln 5$ ⑤ $\ln 6$

14. 행렬 $A = \begin{bmatrix} 5 & 0 & 0 \\ 1 & 2 & 1 \\ 1 & 1 & 2 \end{bmatrix}$ 가 주어질 때, 역행렬 A^{-1} 의 고윳값의 합은? [3점]

- ① 9 ② $\frac{1}{9}$ ③ $\frac{23}{15}$ ④ $\frac{21}{15}$ ⑤ $\frac{9}{15}$

15. 다음과 같이 선형사상 $T: \mathbb{R}^3 \rightarrow \mathbb{R}^5$ 이 주어질 때, 선형사상 T 의 상공간 $\text{Im}(T)$ 의 차원은? [2점]

$$T(a,b,c) = (a+c, a+b+2c, b+c, a+c, b+c)$$

- ① 1 ② 2 ③ 3 ④ 4 ⑤ 5

16. 벡터 $(1,1,1)$ 를 행렬 방정식 $\begin{bmatrix} 2 & -1 & 1 \\ 1 & 2 & 1 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \end{bmatrix}$ 의
해공간으로 정사영한 벡터(orthogonal projection)의 크
기는? [3점]

- ① $\frac{1}{\sqrt{27}}$ ② $\frac{1}{\sqrt{45}}$ ③ $\frac{1}{\sqrt{6}}$ ④ $\frac{1}{\sqrt{35}}$ ⑤ $\frac{1}{\sqrt{15}}$

17. 다음 조건을 만족하는 수열 $\{a_n\}$ 의 초기항 a_1 의 값
은? [4점]

$$\lim_{n \rightarrow \infty} n^2 a_n = 5, \quad \sum_{n=1}^{\infty} a_n = 2, \quad \sum_{n=1}^{\infty} n a_n = 3,$$

$$\sum_{n=1}^{\infty} (n+1)^2 (a_{n+1} - a_n) = 1.$$

- ① -4 ② -3 ③ -1 ④ 1 ⑤ 2

18. 멱급수 $\sum_{n=0}^{\infty} \frac{2^n + 5^n}{4^n + 6^n} x^n$ 의 수렴반경은? [3점]

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

19. 제1사분면에서 부등식 $x^2 + y^2 \leq 4$ 를 만족하는 영역
의 경계를 따라 반시계 방향으로 매개화한 곡선 C 에
대해 선적분

$$\oint_C (xy^2 + x^2)dx + (4x - 1)dy$$

의 값은? [4점]

- ① $2\pi - 2$ ② $4\pi - 2$ ③ $4\pi - 4$ ④ $4\pi - 6$ ⑤ $4\pi - 8$

20. 이중적분 $\int_0^4 \int_{\sqrt{x}}^2 \frac{1}{1+y^3} dy dx$ 의 값은? [3점]

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

[끝]