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성명 : _____   수험번호 : _____

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1. 수험생 인적사항과 답안은 반드시 지워지지 않는 검은색 필기구로 작성하기 바랍니다. (파란색 필기구, 연필, 샤프 사용금지, 단 예비 마킹시 빨간펜은 사용 가능)

2. 답안지에 수정테이프 사용 가능합니다.

3. 답안지에 문제유형(A형, B형)을 정확하게 선택하여 마킹하십시오.

4. 시험 종료 10분 전부터는 답안지를 교체할 수 없습니다.

가톨릭대학교
THE CATHOLIC UNIVERSITY OF KOREA

[1-3] 빈칸에 들어갈 가장 적절한 표현을 고르시오.

1. Plenty of people feel a moral obligation to _____ their own greenhouse gas emissions to mitigate climate change.

① tout   ② curb
③ ignite   ④ expedite

2. Studies show that some personality traits are fairly stable but others are _____ enough to go through some changes as we age.

① inherent   ② malleable
③ provocative   ④ versatile

3. As an independent third party, the Pope would, on occasion, be asked to _____ disputes between kingdoms.

① proliferate   ② deliberate
③ obliterate   ④ arbitrate

[4-5] 빈칸에 들어갈 어법에 맞는 표현을 고르시오.

4. Established politicians may find it necessary to embrace data-driven campaigning strategies _____ favor messages echoing the existing conviction of voters.

① what   ② which
③ where   ④ whose

5. Ecology is not a single domain but rather a synthesis of various ecological subfields and specialties _____ from different scientific disciplines, all of which share the common goal of understanding the interactions between organisms and their environments.

① stem   ② stems
③ stemming   ④ stemmed

[6-10] 빈칸에 들어갈 가장 적절한 표현을 고르시오.

6. All leaders are directed and inspired as much by their readings as they are by their closest advisers. Thus, the book choices a leader makes can be crucial. As with all things touching on leadership, the books that work for one leader may not work for another. Failing to make conscious choices about what to read is one of the worst things a leader can do. It's far better for leaders to make their own mistakes than it is to permit best-seller lists, editors, or literary critics to make leaders' choices for them. No leaders worth their salt would let outsiders choose their chief lieutenants for them, and by the same token leaders shouldn't let someone else choose their books. In reading, as in so many other areas, _____ is an essential prerequisite for effective leadership and for avoiding the most pernicious and lasting forms of failure.

① cultivating one's ability to empathize
② maintaining one's intellectual independence
③ educating oneself about a wide variety of topics
④ allowing others to get involved in decision-making

7. Singapore is now the communications and financial hub of Southeast Asia as well as a thriving high-tech manufacturing center. The Singaporean government has played an active role in the development process but has also allowed market forces freedom to operate. Singapore has encouraged investment by multinational companies (especially those involved in technology) and has itself invested heavily in housing, education, and some social services. This system _____. The government is able to manipulate the election process, ensuring that the opposition never holds more than a few seats in parliament. While many Singaporeans object to such a situation, others counter that the system has brought fast growth as well as a clean, safe, and remarkably corruption-free society.

① is far from fully democratic
② pursues inclusive governance
③ seeks transparency in election
④ is resistant to political regulation

8. Public eye behavior in the U.S. is considerably more restricted than in other parts of the world. In the U.S., staring openly at someone in a public place is considered rude and an infringement on his or her privacy. Instead, Americans practice what Erving Goffman refers to as "civil inattention," a very subtle practice whereby people give others just enough eye contact to _____ their presence but at the next moment withdraw that eye contact so they are not singled out as an object of particular _____. When two people are walking toward each other, civil inattention permits eye contact up to approximately eight feet before the eyes are cast downward as they pass—as Erving Goffman puts it, "a kind of dimming of light."

① feel - resistance   ② reveal - attention
③ impose - interest   ④ acknowledge - curiosity

9. Much powerful writing is rooted in firsthand experience. Drawing on personal experience gives a special, authentic touch to the discussion of larger issues. When we read about gender roles or the immigrant experience, we assume that the writer knows the subject at first hand. While reading about affirmative action, we want to know whether the author can say: "I was there"—as a target, a beneficiary, a witness, or a close, caring observer. We want to see what theories or statistics mean to the lives of people the author has known or observed. Words are just words until _____.

① we can relate them to the experience of someone involved
② we can see their relevance in the broader scope of society
③ they align with our own perspectives and understanding
④ we interpret their meanings in the context of authentic history

10. In the realm of urban planning, there is an ongoing and intricate discourse about the most effective approach to shaping the development of cities. Advocates for a laissez-faire model contend that cities should grow organically based on market demands, allowing market forces to guide the evolution of urban landscapes. However, urban experts hold a contrasting view, arguing that such an approach is not without pitfalls. For instance, the rapid expansion of metropolitan areas like Beijing and Mumbai, where uncontrolled urban sprawl, driven solely by market forces, has resulted in infrastructural challenges, environmental degradation, and unequal access to resources. This exemplifies how spontaneous urban growth _____.

① may lead to homogenization of the city's cultural landscapes
② often results in developments that fall short of meeting market needs
③ ensures equitable distribution of resources and promotes sustainability
④ might lead to unintended consequences and hinder sustainable development

[11-15] 다음 글을 읽고 물음에 답하시오.

11. Whales and dolphins, collectively known as cetaceans, are very social animals like humans. In the wild, generally coastal waters or the open sea, they live in loosely to highly structured groups known as pods. Typically, the pods are composed of nuclear and extended family members with whom they interact for prolonged periods of time or for life. For example, orcas, the largest members of the dolphin family, live in tightly knit maternal groups consisting of the mother, her adult sons, her adult daughters, and her daughters' offspring, all of whom bond for life. These relationships are so exacting that each pod has its own distinct dialect by which it communicates. Some researchers believe the orca may be the most socially bonded species on the planet. When individual orcas are captured, the entire social pattern of the group is destroyed. Often members not targeted for capture are either injured or killed in the process. Placing newly acquired specimens in confinement with more seasoned residents results in a totally abnormal and artificial social structure.

Q: According to the passage, which of the following is NOT true?

① Orcas form close-knit maternal pods with multiple generations of family.
② There are distinct dialects used by different orca families.
③ Capturing an individual orca can pose risks to non-targeted pod members.
④ Introducing newly acquired orcas to existing captives improves social integration.

12. In grocery stores and drugstores, it's common to encounter an aisle filled with various "air freshener" products. From scented candles to "fresh-smelling" sprays and "natural" plug-in air diffusers, marketing encourages us to use these products to mask unpleasant odors and create a pleasant home fragrance. (A) However, a significant issue arises as these products typically contain a range of chemicals that, when released, may directly impact our health, including our brain health. (B) Air freshening products are loaded with molecules known as "volatile organic compounds" or VOCs, which are potent air pollutants and include recognized carcinogens like formaldehyde and benzene. (C) In a 30-year-old study, researchers showed that plants could cut down VOCs in small airtight containers, which led consumers to overestimate the value of their houseplants. (D) Furthermore, scented candles and aerosol sprays may release elevated levels of particulate matter, known as a brain toxin. If you opt to freshen your air, consider simmering spices and herbs in water on your stove. Additionally, seek out unscented cleaning supplies and candles.

Q: Which of the following should be deleted for the flow of the passage?

① (A)　　　　　　　　② (B)
③ (C)　　　　　　　　④ (D)

13. Scientific studies have revealed that the drive to play is a biologically hard-wired tool, common to nearly all mammals. Play triggers the activation of the brain's reward centers, leading to the release of feel-good chemicals such as dopamine and oxytocin, as well as powerful neural growth factors that support learning and mental flexibility. It induces a drop in stress hormones, uplifts mood, and brings about an energizing effect. An often underestimated aspect of play is its impact on cognition. Researchers have observed that animals engaged in play go through a sequence of actions that are frequently more random, chaotic, and variable than serious real-life events. This dynamic activity requires improvisation, creativity, and adaptability in the face of uncertainty. In essence, play serves as a training ground, preparing individuals to expect the unexpected and adapt with aplomb.

Q. What is the main point of the passage?

① Play is a universal trait found in almost all mammals.

② Play enhances cognitive abilities as well as emotional well-being.
③ Play helps the brain to release chemicals which facilitate neural growth.
④ The impact of play on brain health has been a controversial topic in science.

14. Some people think of marketing management as finding enough customers for the company's current output. But this view is too limited. Marketing management is not concerned with serving all customers in every way. Instead, marketers want to serve selected customers that they can serve well and profitably. A company has a desired level of demand for its products. At any point in time, there may be no demand, adequate demand, irregular demand, or too much demand. Marketing management must find ways to deal with these different demand states. It may be concerned not only with finding and increasing but also with changing or even reducing demand. For example, Yosemite National Park is badly overcrowded in the summer. Poor companies sometimes have trouble meeting demand during peak usage periods. In these cases of excess demand, demarketing may be required to reduce the number of customers. Thus, marketing management seeks to affect the types of customers served and the level, timing, and nature of their demand in a way that helps companies achieve their objectives.

Q: What is the main point of the passage?

① Demarketing strategies are particularly useful in times of recession.
② Marketing management should broadly cover management of demand changes.
③ Marketing success depends on targeting the right consumer segment for a product.
④ Attracting additional customers should be the top priority in an ever-evolving market.

15. Research has made it clear that the effectiveness of helping is an essential reinforcer. For example, take a study that asked participants to donate to one of two different charities: UNICEF and Spread the Net. The UNICEF appeal was relatively general and abstract, because UNICEF is a large organization that funds a variety of children's health-care initiatives. While a donation to UNICEF would clearly benefit children in need, it was unclear to donors exactly who would benefit and how. The Spread the Net appeal, in contrast, was more concrete and descriptive. It explained that it would use the funds to buy bed nets to stop the spread of malaria in regions of the world where it was endemic. The study suggests that potential donors are more inclined to help when they can clearly see the tangible results their efforts will bring.

Q: What is the main implication of the passage?

① People tend to donate more when they see the immediate impact of their contributions.
② Spread the Net is more effective than UNICEF in using

donations for children in need.
③ When making a donation, it is important to research and understand the charity's cause.
④ It is crucial for all charities to maintain transparency in their management of donations.

[16-17] 다음 글을 읽고 물음에 답하시오.

Reversing climate change requires massive societal change. Most often, we look to two sources to drive these large-scale behavioral changes—top-down levers created and enforced by regulatory bodies or bottom-up actions voluntarily engaged in and promoted by individual consumers. Both of these methods have severe limitations related to large-scale changes. For a recent example, consider the controversy over plastic straws. In order to eliminate this waste from consumption, policy makers could ban the use of straws in restaurants and retail environments. These bans are slow and controversial. Another option would be social marketing initiatives focused on discouraging use at the consumer level. Each consumer could be educated on the impact of the choice related to the affected sea life and amount of waste, and each time confronted with the option to resist its use. This type of consistent action _____ due to "drop in the bucket" perceptions and puts the responsibility each time on the consumer in the face of choice overload and competing motivations. Alternatively, meso-level initiatives, such as voluntary brand responses, can drive societal change more effectively. Numerous brands like Starbucks, Alaska Airlines, and McDonald's voluntarily ceased to offer disposable straws. While each level has its pros and cons, brand-level action is certainly more scalable than the individual level and more flexible and innovative than the policy level.

16. What is the best expression for the blank?

① is arduous and demotivating
② can be laborious but rewarding
③ often goes unnoticed and unappreciated
④ may appear minor but is surely impactful

17. What is the best title for the passage?

① How Does Sustainability Increase Brand Value?
② Green Business: How the Environment Impacts Business
③ Small Actions Can Make Big Differences on Climate Change!
④ Unique Role of For-Profit Brands: Bridging the Gap in Climate Action

[18-20] 다음 글을 읽고 물음에 답하시오.

A group of multi-national scientists have used gene-splicing techniques to create an extraordinary tomato. It contains levels of antioxidants 200 percent higher than unmodified tomatoes. When fed to highly cancer-susceptible mice, the tomatoes significantly extended the mice's lifespan. These studies have

received wide attention, but an equally momentous achievement of genetic modification has been largely ignored for almost a decade. That innovation is Golden Rice, a collection of new rice varieties that is bio-fortified, or enriched, by genes that express beta-carotene, the precursor of vitamin A, which is converted in the body, as needed, to the active form.

In developing countries, 200-300 million children are at risk of vitamin A deficiency, which can be devastating and even fatal. It increases susceptibility to common childhood infections such as measles and diarrhoeal diseases, and is the single most important cause of childhood blindness in developing countries. Golden Rice could save hundreds of thousands of lives every year and enhance the quality of life for millions more.

But one aspect of this shining story is _____. Intransigent opposition by anti-science, anti-technology activists Greenpeace, Friends of the Earth, and a few other groups has spurred already risk-averse regulators to adopt an overly cautious approach that has _____ approvals.

Nine years after its creation, despite its vast potential to benefit humanity, Golden Rice remains hung up in regulatory red tape, with no end in sight. There is absolutely nothing about Golden Rice that should require endless case-by-case reviews and bureaucratic dithering. By contrast, plants constructed with less precise techniques generally are subject to no government scrutiny or requirements (or opposition from activists) at all. The Golden Rice story makes it clear that we do not yet have the will and the wisdom to make that happen.

18. What are the best expressions for the blanks?

① veiled - withheld
② tarnished - stalled
③ distorted - prompted
④ overestimated - triggered

19. What is the best title for the passage?

① Leaders of the New Green Revolution
② Are Genetically Modified Food Safe?
③ A Squandered Golden Opportunity
④ New Wrinkles in Plant Research

20. According to the passage, which of the following is true?

① Golden Rice has been recognized as widely as genetically modified tomatoes.
② Golden Rice is a newly developed grain that has the potential to help cure cancers.
③ The approval of Golden Rice is imminent due to accumulating evidence of safety.
④ Golden Rice's potential is being hamstrung by misguided legislation and backward thinking.

21. 다음 급수 중 수렴하지 않는 것은?

① $\sum_{n=1}^{\infty} \sin\left(\dfrac{1}{n^2}\right)$

② $\sum_{n=1}^{\infty} \dfrac{\arctan n}{n^5}$

③ $\sum_{n=1}^{\infty} (-1)^n \dfrac{n^n}{n!}$

④ $\sum_{n=1}^{\infty} \dfrac{11^n}{(n+1)5^{2n+1}}$

22. 급수 $\sum_{n=1}^{\infty} \dfrac{\cos(n^2\pi)}{n^2} x^n$ 이 수렴하는 실수 x의 범위는?

① $(-1, 1)$ ② $(-1, 1]$ ③ $[-1, 1)$ ④ $[-1, 1]$

23. 다음 중 $60\sin(0.1)$과의 차가 0.00001 이하인 값은?

① 5.97 ② 5.98 ③ 5.99 ④ 6.00

24. 함수 $f(x) = e^{ax} + e^{-bx} - ab$의 $x = 0$에서의 선형근사가 $L(x) = 2x - 1$일 때 $f''(0)$의 값은? (단, a, b는 실수)

① 10   ② 12   ③ 14   ④ 16

25. 점 $P(2, 3, 5)$와 평면 $W = \{t(1, 0, 1) + s(2, 1, 1) \mid t, s \in \mathbb{R}\}$ 사이의 거리는?

① $\sqrt{3}$ ② 2   ③ $2\sqrt{3}$ ④ 4
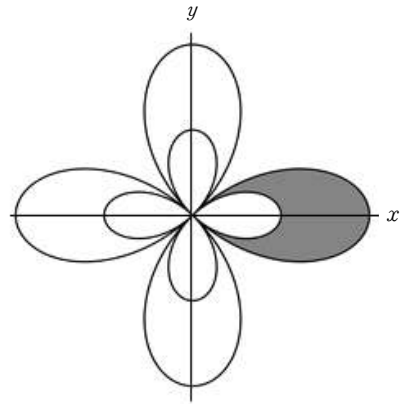
26. 타원 $x^2 + 4y^2 = 4$에서 함수 $f(x, y) = x + 2y$의 최댓값과 최솟값의 곱은?

① -8 ② -4 ③ 4   ④ 8

27. 윗면을 제외한 나머지 다섯 면의 넓이의 합이 48인 직육면체의 부피의 최댓값은?

① 30   ② 32   ③ 34   ④ 36

28. 두 극곡선 $r = \cos 2\theta$와 $r = 2\cos 2\theta$를 xy평면에 그리면 다음과 같다. 이 그림에서 색칠된 영역의 넓이는? (단, $(x, y) = (r\cos\theta, r\sin\theta)$)

① $\dfrac{1}{8}\pi$ ② $\dfrac{3}{8}\pi$ ③ $\dfrac{5}{8}\pi$ ④ $\dfrac{7}{8}\pi$

29. 함수 $f(x, y) = e^x y^2$과 단위벡터 u에 대하여 방향도함수 $D_u f(0, 2)$의 최댓값은?

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

30. 곡면 $z = e^{x^2 - y^2}$ 위의 점 $(1, -1, 1)$에서 이 곡면에 접하는 평면의 방정식은?

① $2x + 2y - z + 1 = 0$　　② $2x - 2y - z - 3 = 0$
③ $2x + y - 2z + 1 = 0$　　④ $x + 2y - z + 2 = 0$

31. 함수 $f(x,y) = 4\ln x + e^y - x - y$의 임계점을 (a, b)라고 할 때 다음 중 옳은 것은?

① $f(a, b)$는 극댓값이고, $a + b = 2$이다.
② $f(a, b)$는 극댓값이고, $a + b = 4$이다.
③ 임계점 (a, b)는 안장점이고, $a + b = 2$이다.
④ 임계점 (a, b)는 안장점이고, $a + b = 4$이다.

32. 이중적분 $\int_{-1}^{1} \int_{|x|}^{1} e^{y^2} \, dy \, dx$의 값은?

① $e - 2$　　② $e - 1$　　③ e　　④ $e + 1$

33. 영역 $D = \{(x, y) \in \mathbb{R}^2 \mid 0 \le x \le 1, 0 \le y \le x^2\}$에 대하여 이중적분 $\iint_D x \cos y \, dA$의 값은?

① $1 - \cos 1$　　② $\frac{1}{2}(1 - \cos 1)$　　③ $1 - \sin 1$　　④ $\frac{1}{2}(1 - \sin 1)$

34. 두 벡터함수 $F(u, v) = (u + v, u - v)$, $G(x, y) = (x^2 + y^2, x^2 - y^2)$에 대하여 $(1, 2)$에서 $G \circ F$의 야코비안은?

① -48　　② -36　　③ -24　　④ -12

35. 다음 행렬 A에 대하여 부분공간 $W = \{Ax \mid x \in \mathbb{R}^3\}$의 차원은?

$$A = \begin{pmatrix} 1 & 1 & 2 \\ 1 & 2 & 1 \\ 1 & 3 & 0 \end{pmatrix}$$

① 0　　② 1　　③ 2　　④ 3

36. 다음 중 모든 열벡터 $x, y \in \mathbb{R}^2$에 대하여 $\|Ax - Ay\| = \|x - y\|$인 행렬 A는? (단, $\left\|\begin{pmatrix} a \\ b \end{pmatrix}\right\| = \sqrt{a^2 + b^2}$)

① $\dfrac{1}{\sqrt{2}}\begin{pmatrix} 1 & 1 \\ 1 & 1 \end{pmatrix}$ ② $\dfrac{1}{\sqrt{2}}\begin{pmatrix} 1 & 1 \\ 1 & -1 \end{pmatrix}$

③ $\dfrac{1}{\sqrt{2}}\begin{pmatrix} 1 & 0 \\ 1 & 2 \end{pmatrix}$ ④ $\dfrac{1}{\sqrt{2}}\begin{pmatrix} 1 & 0 \\ 1 & -2 \end{pmatrix}$

37. 다음 중 행렬 $A = \dfrac{1}{2}\begin{pmatrix} 15 & -7 \\ 14 & -6 \end{pmatrix}$에 대하여 극한값 $\lim_{n \to \infty}\|A^n v\|$이 존재하는 벡터 v는? (단, $\left\|\begin{pmatrix} a \\ b \end{pmatrix}\right\| = \sqrt{a^2 + b^2}$)

① $\begin{pmatrix} 4 \\ 1 \end{pmatrix}$ ② $\begin{pmatrix} 4 \\ 2 \end{pmatrix}$ ③ $\begin{pmatrix} 1 \\ 4 \end{pmatrix}$ ④ $\begin{pmatrix} 2 \\ 4 \end{pmatrix}$

38. 선형변환 $T : \mathbb{R}^2 \to \mathbb{R}^2$의 고윳값은 2와 -3이고 $(2, 4)$, $(-1, 3)$은 각각 고윳값 2와 -3에 대응하는 T의 고유벡터이다. $T(3, -2) = (a, b)$일 때, $a + b$의 값은?

① 14   ② 18   ③ 22   ④ 26

39. 미분방정식 $y' = 2(3 - y)$, $y(0) = 1$의 해 $y(t)$에 대하여 $y(\ln 4)$의 값은?

① $\dfrac{5}{2}$ ② $\dfrac{11}{4}$ ③ $\dfrac{17}{6}$ ④ $\dfrac{23}{8}$

40. 두 함수 $x(t), y(t)$가 미분방정식
$$\frac{dx}{dt} = 3x - 2y$$
$$\frac{dy}{dt} = 4x - 3y$$
를 만족시키고 $\lim_{t \to \infty}(x(t)^2 + y(t)^2) = 0$일 때, 다음 중 점 $(x(0), y(0))$로 가능한 것은?

① $(3, 6)$ ② $(3, 9)$ ③ $(6, 3)$ ④ $(9, 3)$