

영어+자연 A형(40문항, 70분)

2024학년도 편입학 전형

● 지망학부(과) :

성명 :

가번호 :

● 유의사항

1. 문제지에 지망학부(과), 성명, 가번호를 정확히 쓰시오.
2. OMR 답안지에 지망학부(과), 성명, 가번호를 정확히 쓰고, 가번호를 마킹하시오.
3. OMR 답안지는 컴퓨터용 사인펜으로 마킹하고, 답 이외에는 어떠한 표기도 하지 마시오.
4. OMR 답안지의 “문제유형” 란에 A를 마킹하시오.
5. 시험 종료 후 OMR 답안지와 문제지를 모두 제출하시오.

영 어 (1-25)

I. Choose the one that is closest in meaning to the underlined word. (1-9)

1. The author used his inhuman, yet all too human narrator to gaze upon the theological heft of human lives and to call its bluff in his dystopian novel.
① insignificance ② fragility
③ weight ④ meagerness
2. Most of his recent novels are narrated in accents of punishing blandness; all of them make plentiful use of techniques such as cliché, banality, and evasion.
① objectivity ② particularity
③ dullness ④ impartiality
3. The directives which the captions give to those looking at pictures in magazines soon become even more explicit and more imperative in the film where the meaning of each single picture appears to be prescribed by the sequence of all preceding ones.
① precise ② essential
③ implicit ④ eccentric
4. The film responds to the shriveling of the aura with an artificial build-up of the personality outside the studio and the cult of the movie star, fostered by the money of the film industry, preserves not the unique aura of the person but the spell of the personality.
① burgeoning ② bustling
③ flushing ④ dwindling
5. This class of morbid anxiety would then be no other than what is uncanny, irrespective of whether it originally aroused dread or some other affect.
① impertinent ② irreverent
③ regretful ④ regardless

6. An accident or a death will rarely take place without having cast its shadow before on their minds and for the reason they are in the habit of mentioning this state of affairs in the most modest manner, saying that they have presentiment which usually comes true.

- ① tranquility ② foreboding
③ composure ④ hostility

7. The Houthis had refrained from directly confronting U.S. forces, even as the Biden administration took the lead in announcing the formation of a maritime coalition to confront the Yemeni militants.

- ① alliance ② summation
③ arbitration ④ lien

8. A predominant ideology of internationalization in higher education today is instrumentalism, with the goal to enrich the labor force and consolidate the economic proWess of a country.

- ① reliance ② capacity
③ compassion ④ diffidence

9. Other research on immigrants reveals the importance of their ties to their country of emigration and to their new identities as transnationals and as people who shuttle between communities, rather than as acculturating newcomers.

- ① affirming ② assimilating
③ acceding ④ abbreviating

II. Choose one that is either ungrammatical or unacceptable. (10-15)

10. One can follow the swarming activity of these procedures that, far from ①being regulated or eliminated by government's administration, ②have reinforced themselves in a ③proliferating illegitimacy and combined in accord with unreadable but stable tactics to the point of ④being constituted everyday regulations and surreptitious creativities.

11. That object-choice has ①effected on a narcissistic basis, so that the object-cathexis, when obstacles comes in this way, can regress to narcissism. The narcissistic identification with the object then becomes a substitute for the erotic cathexis, the result of ②which is that ③in spite of the conflict with the loved person the love-relation need not ④be given up.

12. It is true that the operations of ①walking on can be ②traced on city maps in such a way as to ③transcribing their paths and their trajectories but these thick or thin curves only refer, like words, ④to the absence of what has passed by.

13. One would be tempted ①to regard these cases as non-psychogenic, if it ②were not for the fact that the psycho-analytic method has succeeded ③in arriving ④for a satisfactory solution.

14. Security of supply is ①of concern in a ②politically unstable world, and new demands for ③imported oil from China and other growing economies are ④stressing in markets.

15. All require some form either ①of land use, ②with its attendant disruption of the associated ecosystems, or of extraction, ③in which can be disruptive for fossil fuels, though ④less so for nuclear ones.

III. Choose the one that is most suitable for the blank. (16-19)

16. Foucaudian discipline may be identified neither with an institution nor with an apparatus since it is a type of power, a _____ for its own exercise, comprising a whole set of instruments, techniques, procedures, levels of application; it is an anatomy of power, a technology.

- ① modality ② modicum
③ molt ④ mood

17. Many adults still retain their apprehensiveness in this respect, and no bodily injury is so much dreaded by them ____ an injury to the eye.

- ① for ② with
③ as ④ through

18. In 1997, the Asian financial crisis struck, _____ the need for an economic bailout from the International Monetary Fund.

- ① threatening ② precipitating
③ chagrining ④ mobilizing

19. *Chogi yuhak* (early study-abroad) even worked as a disadvantage in some cases as returnees reported experiencing tremendous stress in _____ in English in the workplace.

- ① performing ② exploiting
③ exploring ④ bringing

IV. Read the following passage and answer the questions. (20-22)

In the twentieth century a number of philosophers have begun to be concerned about what they take to be the fateful consequences of holding human knowledge of the world to be analogous to visual perception. John Dewey argued in 1929, ([A]), that Western philosophy since Plato and Aristotle has been dominated by a "spectator theory of knowledge" in which the theory of knowing is modeled after what was supposed to take place in the act of vision, and he criticized philosophy's corresponding insistence on the importance of unclouded observation and accurate representation of reality—on *seeing* the world clearly—for reinforcing the traditional depreciation of practical activity on the part of the intellectual class. In Dewey's judgment, the spectator theory of knowledge reflects the profound conviction (or prejudice) prevalent among Western philosophers that the aim of philosophical or scientific inquiry is to come to know reality—as we seem to do in vision—without in any way interfering with it or modifying it through practical activity. He claims, further, that the main consequence of this search for the accurate, undistorted representation of what is independently real has been the familiar, but in his view needless and fruitless, dispute between philosophers over which objects are in fact the most certain and most real—physical, mathematical, or logical objects—and over which kind of object genuine knowledge should seek to conform to.

As an alternative to the spectator theory of knowledge Dewey himself proposes a practical, participatory conception of knowledge based on the idea of experimentation. According to this model, the inquirer does not seek a purely theoretical understanding of the world through endeavoring to bring his thoughts into conformity with a reality which is assumed to be independent of human activity, but rather operates on the objects of study (for example, through adding chemicals to one another or through changing the soil in which plants grow) and so participates in generating the things that are known. If all genuine knowledge is understood according to this model of experimentation, Dewey maintains, the object of

knowledge will not be thought of as something fixed with antecedent existence or essential being, but will be seen to reside in the consequences of directed action in whatever field we are working, be it physics, chemistry, sociology, or psychology. As a result, no single object of knowledge can be held up as the most real, because all the things we know will be understood to be the products of specific practical operations on objects in the world which are designed to deal with specific, equally pressing problems.

20. Which of the following is the most appropriate for [A]?

- ① for example ② however
③ therefore ④ then

21. According to the passage, which of the following is not likely to be the characteristics of the “spectator theory of knowledge”?

- ① How people acquire knowledge is, and should be, modeled based on how they see and observe the actual reality.
② Philosophical theories should describe in a correct way what is real in the actual world.
③ Practical aspects had better be ignored in doing philosophy because they are not related to understand the actual reality.
④ Disputes on what is certain and what is real are not significant because they do not contribute to our actual lives.

22. Which of the following can be inferred from the passage?

- ① Philosophers cannot see what is real because they build their theories based on what and how they can see.
② According to Dewey, people can acquire knowledge on the unchanging reality only based on the experimentation.
③ For Dewey, what is important is not the fixed reality but the result of actions, through which we can gain knowledge.
④ Plato and Aristotle wrote works on practical issues and therefore they can be said to be respectful to the experimental knowledge.

VI. Read the following passage and answer the questions. (23-25)

Real numbers are called ‘real’ because they seem to provide the magnitudes needed for the measurement

of distance, angle, time, energy, temperature, or of numerous other geometrical and physical quantities. However, the relationship between the abstractly defined ‘real’ numbers and physical quantities is not as clear-cut as one might imagine. Real numbers refer to a mathematical idealization rather than to any actual physically objective quantity. The system of real numbers has the property of density, for example, that between any two of them, no matter how close, there lies a third. It is not at all clear that physical distances or times can realistically be said to have this property. If we continue to divide up the physical distance between two points, we would eventually reach scales so small that the very concept of distance, in the ordinary sense, could cease to have meaning. It is anticipated that at the ‘quantum gravity’ scale of 10^{20} th of the size of a subatomic particle, this would indeed be the case. But to mirror the real numbers, we would have to go to scales indefinitely smaller than this: 10^{200} th, or 10^{2000} th, for example. It is not at all clear that such absurdly tiny scales have any physical meaning whatever. A similar remark would hold for correspondingly tiny intervals of time.

The real number system is chosen in physics for its mathematical utility, simplicity, and elegance, together with the fact that it accords, over a very wide range, with the physical concepts of distance and time. It is not chosen because it is known to agree with these physical concepts over all ranges. One might well anticipate that there is indeed no such accord at very tiny scales of distance or time. It is commonplace to use rulers for the measurement of simple distances, but such rulers will themselves take on a granular nature when we get down to the scale of their own atoms. This does not, in itself, prevent us from continuing to use real numbers in an accurate way, but a good deal more sophistication is needed for the measurement of yet smaller distances. We should at least be a little suspicious that there might eventually be a difficulty of fundamental principle for distances on the tiniest scale. As it turns out, Nature is remarkably kind to us, and it appears that the same real numbers that we have grown used to for the description of things at an everyday scale or larger retain their usefulness on scales much smaller than atoms—certainly down to less than one-hundredth of the ‘classical’ diameter of a sub-atomic particle, say an electron or proton—and seemingly down to the ‘quantum gravity scale’, twenty orders of magnitude smaller than such a particle! This is a quite extraordinary extrapolation from experience. The familiar concept of real-number distance seems to hold also out to the most distant quasar and beyond, giving an overall range of at least 10^{42} , and perhaps 10^{60} or more. The appropriateness of the real number

system is not often questioned, in fact. Why is there so much confidence in these numbers for the accurate description of physics, when our initial experience of the relevance of such numbers lies in a comparatively limited range?

23. According to the passage, why is the real number system used in physics?

- ① Because of its concreteness and intuitiveness
- ② Because of its exhaustive and total accordance with reality
- ③ Because of its mathematical elegance and usefulness
- ④ Because of its applicability to indefinitely small subatomic scales

24. Which of the following cannot be inferred from the passage?

- ① Physical phenomena can be mathematically idealized by using real numbers.
- ② A physically quantity always corresponds to a certain real number in a meaningful way.
- ③ Real numbers can be used to express infinitesimal as well as enormous quantities.
- ④ The density of real numbers may not be useful in measuring physical quantities.

25. Which of the following is most likely to follow the passage?

- ① The reason why the real number system is so confidently used in many areas of physics
- ② The reason why the real number system is different from other number systems
- ③ The reason why the rulers for the measurement cannot be used in physics
- ④ The reason why the mathematical utility, simplicity, and elegance are physically crucial

수 학 (26-40)

26. 함수 $f(x) = e^{\sin x} + \sin^{-1}x$ ($-1 \leq x \leq 1$)에 대하여 $y = 1$ 에서 $f^{-1}(y)$ 의 도함수 값 $(f^{-1})'(1)$ 을 구하시오.

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

27. 다음 중에서 수렴하는 급수를 모두 고르시오.

- (가) $\sum_{n=1}^{\infty} \frac{(-1)^n}{n}$
- (나) $\sum_{n=1}^{\infty} \left(\frac{1}{n} - \frac{1}{e^n} \right)$
- (다) $\sum_{n=1}^{\infty} \frac{1}{n} \sinh \frac{1}{\sqrt{n}}$

- ① (가) ② (가), (나) ③ (다) ④ (가), (다)

28. 모든 실수 x 에 대하여

$$12(x-2)^{100}e^x = \sum_{n=0}^{\infty} a_n(x-2)^n$$

을 만족한다. a_{105} 의 값을 구하시오.

- ① $\frac{e^2}{12}$ ② $\frac{e}{12}$ ③ $\frac{e^2}{10}$ ④ $\frac{e}{10}$

29. xy 평면 전체에서 정의된 함수 f, g, h 가

$$f(x, y) = \begin{cases} 1 & (xy > 0) \\ 0 & (xy = 0) \\ -1 & (xy < 0) \end{cases}, \quad g(x, y) = |xy|, \quad h(x, y) = xy$$

일 때, 다음 중 옳은 것을 고르시오.

- ① $f(f(x, y), f(x, y)) = f(x, y)$
- ② $f(g(x, y), h(x, y)) = f(x, y)$
- ③ $f(x, y)$ 는 $(0, 0)$ 에서 연속이다.
- ④ $\frac{h(x)}{x^2 + y^2}$ 는 $(0, 0)$ 에서 연속이다.

30. 다음 중 거듭제곱급수 $\sum_{n=2}^{\infty} \frac{(-1)^n}{2^n n \ln n} x^n$ 에 대하여 옳은 것을 모두 고르시오

(가) 수렴반지름은 2이다.
 (나) $x = -2$ 에서 발산한다.
 (다) $x = 1$ 에서 절대수렴한다.
 (라) 수렴범위는 $-2 < x < 2$ 이다.

- ① (가), (나) ② (가), (나), (다)
 ③ (가), (나), (라) ④ (나), (다), (라)

31. 함수 $y(x)$ 가

$$y'' - 4y' + (4 + \pi^2)y = 0, \quad y(1) = -e^2, \quad y'(0) = 2 - \pi$$

를 만족할 때 $y(0)$ 의 값을 구하시오.

- ① 1 ② 2 ③ 3 ④ 4

32. 다음 초기값 조건을 가진 미적분 방정식

$$y'(t) + y(t) = 1 - \int_0^t e^{-(t-u)} y(u) du, \quad y(0) = 0$$

을 만족하는 $y(t)$ 에 대하여 $\lim_{t \rightarrow \infty} y(t)$ 를 구하시오.

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

33. 영역

$$\Omega = \{ (x, y, z) \in \mathbb{R}^3 \mid 1 \leq x^2 + y^2 + z^2 \leq 4, z \geq 0 \}$$

에 대하여 삼중적분

$$\iiint_{\Omega} e^{(x^2 + y^2 + z^2)^{3/2}} dx dy dz$$

를 구하시오.

- ① $\frac{2}{3}(e^6 - 1)\pi$ ② $\frac{2}{3}(e^6 - e)\pi$
 ③ $\frac{2}{3}(e^8 - 1)\pi$ ④ $\frac{2}{3}(e^8 - e)\pi$

34. 이중적분 $\int_0^2 \int_0^{\sqrt{2y-y^2}} \sqrt{x^2 + y^2} dx dy$ 를 구하시오.

- ① $\frac{16}{9}$ ② $\frac{2}{9}$ ③ $\frac{2}{3}\pi$ ④ $\frac{1}{6}\pi$

35. 곡선 $C: y = x^2$ ($x = 0$ 에서 $x = 1$ 까지)에 대하여, 적분

$$\int_C (e^x y + e^y) dx + (e^x + x e^y) dy$$

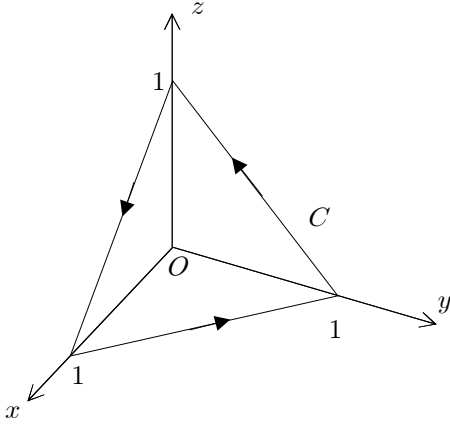
를 구하시오.

- ① e ② $2e$ ③ $3e$ ④ $4e$

36. C 는 꼭지점이 $(1,0,0)$, $(0,1,0)$, $(0,0,1)$ 인 삼각형의 경계선이며 C 의 방향은 그림과 같이 시계 반대 방향이다. 삼차원 벡터장 $\mathbf{F}$ 에 대하여

$$\oint_C \mathbf{F} \cdot d\mathbf{r} = \int_0^1 \int_0^{1-x} (-4x - y) dy dx$$

이 성립할 때, $\text{curl} \mathbf{F}$ 를 맞게 구한 것을 고르시오.



- ① $\text{curl} \mathbf{F} = -x\mathbf{i} - 2x\mathbf{j} + (z-1)\mathbf{k}$
- ② $\text{curl} \mathbf{F} = -x\mathbf{i} - 2x\mathbf{j} + z\mathbf{k}$
- ③ $\text{curl} \mathbf{F} = -x\mathbf{i} + 2x\mathbf{j} + (z-1)\mathbf{k}$
- ④ $\text{curl} \mathbf{F} = -x\mathbf{i} + 2x\mathbf{j} + z\mathbf{k}$

37. 행렬 $A = \begin{pmatrix} 3 & 2 & 0 & -2 \\ 0 & 3 & 1 & 0 \\ 0 & 1 & 0 & 0 \\ -2 & 2 & -1 & 1 \end{pmatrix}$ 의 역행렬 $A^{-1} = [b_{ij}]$ 에서

b_{43} 의 값을 구하시오.

- ① 0 ② 1 ③ 7 ④ 19

38. 다음 중 옳은 문장은 몇 개인지 고르시오.

- (a) 행렬 A 가 정사각형 행렬이고, c 는 $c \neq 0$ 인 실수일 때, $(cA)^{-1} = cA^{-1}$ 이다.
- (b) 행렬 A 가 2×3 일 때, 제차선형계 $A\mathbf{x} = \mathbf{0}$ 은 $\text{rank}(A)$ 의 값에 관계없이 항상 $\mathbf{x} \neq \mathbf{0}$ 인 해를 갖는다.
- (c) 행렬 A 가 3×3 일 때, 제차선형계 $A\mathbf{x} = \mathbf{0}$ 은 $\text{rank}(A)$ 의 값에 관계없이 항상 $\mathbf{x} = \mathbf{0}$ 만을 해로 갖는다.
- (d) 행렬 A 가 4×3 이고 $\text{rank}(A) = 3$ 일 때, 제차선형계 $A\mathbf{x} = \mathbf{0}$ 은 항상 $\mathbf{x} = \mathbf{0}$ 만을 해로 갖는다.
- (e) 행렬 A 가 영행렬이 아닌 4×3 행렬일 때, $\text{rank}(A)$ 의 최솟값은 1이고 최댓값은 4이다.

- ① 2개 ② 3개 ③ 4개 ④ 5개

39. 함수 $f(x) = \int_1^2 u^x du$ 에 대하여, $\lim_{x \rightarrow 0} (f(x))^{\frac{1}{x}}$ 을 구하시오.

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

40. 반지름이 1인 반원에서 정상상태의 온도분포 $u(r, \theta)$ 가 라플라스 방정식

$$\frac{\partial^2 u}{\partial r^2} + \frac{1}{r} \frac{\partial u}{\partial r} + \frac{1}{r^2} \frac{\partial^2 u}{\partial \theta^2} = 0$$

과 조건

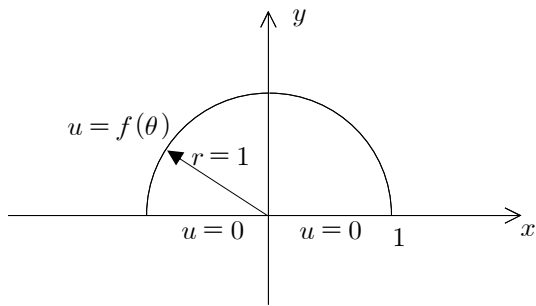
$$u(r, 0) = 0, \quad u(r, \pi) = 0, \quad u(1, \theta) = f(\theta)$$

을 만족하고 $r \rightarrow 0$ 일 때 $u(r, \theta)$ 는 유한하다. 위 문제의 해의 형태는

$$u(r, \theta) = \sum_{n=1}^{\infty} (A_n r^n + B_n r^{-n}) \sin(n\theta)$$

이다. 다음 중 옳지 않은 것을 고르시오.

- ① $A_n = \frac{2}{\pi} \int_0^{\pi} f(\theta) \sin(n\theta) d\theta, \quad n = 1, 2, 3, \dots$
- ② $B_n = 0, \quad n = 1, 2, 3, \dots$
- ③ $f(\theta) = \sin\theta$ 일 때, $A_1 = 1, \quad A_n = 0, \quad n = 2, 3, 4, \dots$
- ④ $f(\theta) = \sin\theta$ 일 때, $u(r, \theta) = \sin\theta$



- 수고하셨습니다 -