

영어+수학 B형(40문항, 70분)

2025학년도 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 B를 마킹하시오.
5. 시험 종료 후 OMR 답안지와 문제지를 모두 제출하시오.

영 어 25문항 (1-25)

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

1. After all, the condition is often associated with other problems such as congenital heart disease and increased risk of certain leukemias.
① subsided ② innate
③ disjointed ④ congested
2. Nuts are high in Vitamin E, a potent antioxidant that may help ward off heart disease and cancer.
① efficacious ② capricious
③ ludicrous ④ subversive
3. The event was a largely somniferous one, with meandering answers about topics such as budget forward estimates, vertical fiscal imbalance and increasing tax thresholds to fight off bracket creep.
① stipulated ② speculative
③ sedimentary ④ soporific
4. It is commonly complained of various works that they say that Catholics are superstitious, that black people are innate incompetent, that Jews are mendacious, and that war is a good and noble undertaking.
① perfidious ② unswerving
③ resolute ④ unrelenting
5. A new and thrilling simulacrum is born full of what appear to be the innate hardships and difficulties of reality, replacing what had become the lackluster simulacrum of air-conditioned immortality, unlimited borrowing and endless consumerism.
① hummock ② huckster
③ humdinger ④ humdrum

6. Hartlib had seven children, had been dismissed for impolitic preaching, and had accumulated great debt as a result, but this had now slowed down his zeal for the advancement of learning.

- ① rash ② upright
③ fief ④ neutral

7. While working as a quality assurance engineer at PMI Industries in Gates, New York, Smalley allegedly forged the signature of an inspector on reports for products that were sold to California-based SpaceX.

- ① annihilated ② eulogized
③ fabricated ④ blustered

8. She is effervescent and forever dreaming up new initiatives that will contribute to the flourishing of Israel's capital and its residents.

- ① nefarious ② anorexic
③ oracular ④ exuberant

9. Illinois' corporate franchise tax makes no sense. It is convoluted and economically harmful, and should be repealed. Even the term “franchise tax” is misleading and outdated, as it is not a tax on the franchise locations of a larger business.

- ① labyrinthine ② gallant
③ jocund ④ agnate

II. Choose the word that is grammatically most inappropriate. (10-15)

10. ①One of the most important ②problem of the amusement park ③is that the number of visitors ④has been gradually decreasing for three years.
11. ①If you want to organize an academic conference successfully, you must send the ②invitation emails in advance ③people who will ④be invited.

12. ①From time to time, we make our subscriber list available ②to companies that sell goods and services by mail that we believe would interest our readers. If you ③would not rather receive such mailings ④via postal mail, please send your current mailing label to Mail Preference Service, P. O. Box 6000, Harlan, IA 51593.

13. ①The most exciting Christmas discs are ②those that showcase a performer excelling in a completely different musical context. Alan Jackson proves just ③how talented is he a singer with this traditional ④collection of big-band arrangements.

14. A proof for the immortality of the soul would be of only academic ①interest to anyone if it ②is the case that the soul ③shown to be immortal ④had nothing to do with one's personal identity.

15. For Peirce, semiosis was ①the way culture happens, and in this ②broader field of semiotic study, his understanding of the object came close ③in the way Saussure understood ④the signified.

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

16. Challengers need to learn as much as they can to prepare for all questions and become _____ with every area of policy even though all of them are beginners now.

- ① perpetuated ② conversant
③ disarrayed ④ arrogated

17. The two airlines began their code-sharing and _____ frequent flyer program about a year ago.

- ① reciprocal ② invulnerable
③ ticking ④ verdure

18. Those pushed aside after losing their health to harsh labor were now fighting death in each room. Swollen, _____, and bruised with boils, each sick with various diseases, they together presented a hellish sight.

- ① full-bodied ② gratified
③ rhubarbed ④ emaciated

19. Water quality would continue to be improved by _____ unused dirt roads and by prohibiting new activities in riparian areas that would have unacceptable long-term effects on water quality, fish, or vegetation.

- ① obliterating ② anchoring
③ fortifying ④ penetrating

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

Google has built a computing chip that takes just five minutes to complete tasks that would take 10,000,000,000,000,000,000,000,000 years for some of the world's fastest conventional computers to complete.

That's 10 septillion years, a number that far exceeds the age of our known universe and has the scientists behind the latest quantum computing breakthrough reaching for a distinctly non-technical term: "mindboggling".

The new chip, called Willow and made in the California beach town of Santa Barbara, is about the dimensions of an After Eight mint, and could supercharge the creation of new drugs by greatly speeding up the experimental phase of development.

[A] Reports of its performance follow a flurry of results since 2021 that suggest we are only about five years away from quantum computing becoming powerful enough to start transforming humankind's capabilities to research and develop new materials from drugs to batteries, one independent UK expert said. Governments around the world are pouring tens of billions of dollars into research.

[B] Significantly, Willow is claimed to be far less prone to error than previous versions and could swell the potential of the already fast-developing field of artificial intelligence.

[C] Quantum computing - which harnesses the discovery that matter can exist in multiple states at once - is predicted to have the power to carry out far bigger calculations than previously possible and so hasten the creation of nuclear fusion reactors and accelerate the impact of artificial intelligence, notably in medical science. For example, it could allow MRI scans to be read in atom-level detail, unlocking new caches of data about human bodies and disease for AI to process, Google said.

[D] Google Quantum AI is one of numerous groups wrestling with how to harness the computing power of quantum mechanics including Microsoft, Harvard University and Quantinuum, a firm with UK links. A key problem is reducing the fragility of quantum chips as even microscopic material defects, cosmic rays and ionising radiation tend to knock them off course.

20. What would be the best title for the passage?

- ① How will Google quantum AI change medical science in five years?
- ② What a quantum computing has achieved for pharmaceutical research
- ③ Quantum computing and fierce competition of the IT corporations
- ④ Google unveils 'mindboggling' quantum computing chip, Willow

21. According to the passage, which of the following is NOT true?

- ① Quantum computing technology can be developed enough in five years to find new materials in pharmaceutical researches.
- ② The ability of AI technology can be largely unaffected by the development of quantum computing.
- ③ By using quantum computing chips, medical science can get breakthrough such as more enhanced MRI scans.
- ④ The new chip, Willow is far more effective in decreasing error than previous version chips.

22. Which of the following is the most appropriate place for the following sentence to be inserted in?

But there are also fears that without guardrails, the technology has the power to crack even the most sophisticated encryption, undermining computer security.

- ① [A]
- ② [B]
- ③ [C]
- ④ [D]

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

Truth is a matter of peculiar disciplinary significance for both philosophers and logicians. Of course, every science and inquiry seeks to say something true about 'what is'. Theologians, scientists, and artists seek to discern the true, whether this truth concerns the highest being, the nature of depression, or social justice, and so forth. The logician and the philosopher, however, are unique in their efforts to mark out the conditions of truth. They both share the tasks of determining the boundaries of intelligibility, separating formal from material conditions of truth, and striving for a language of utmost precision. Both disciplines are thus concerned, in contrast to the particular sciences and arts, with conditions by which truth happens.

Yet throughout the history of Western philosophy, the significant differences between philosophy and logic have been shown to justify the institution of strict disciplinary boundaries between them. Historically, philosophy has been afforded an exalted status correlating to the perceived expansiveness of its domain compared to that of logic. Philosophy takes up topics and questions that are well beyond the purview of logic. Questions about the nature of justice, time, or the soul, for example, are external to the domain of logic. From within the tradition it is not controversial to say that all that is included in logic can be included in philosophy, but not all that can be included in philosophy can be included in logic. Philosophy is held to be the larger, more encompassing, and sometimes the more dignified discipline.

Logic, following the scholastic appropriation of Aristotle, has been conceived as a [A] 'propaedeutic' for knowledge in general. This tradition is reflected in the typical conception of the education process: a student takes courses in logic, which prepares them for rigorous engagement with the sciences or the humanities. This process that begins in logic passes through the sciences and ultimately culminates in philosophy. Philosophy as the culmination of knowledge is a discipline markedly other than the discipline of logic. As a challenge to this traditional order, some philosophers in the 20th century have held that the work of the logician and the work of the philosopher overlap without remainder. In fact, with analytic philosophy broadly construed comes the rejection of many of the perennial questions that traditionally populated philosophical research. Questions regarding the purpose of the universe, the nature of the soul, the attributes of God are taken as flights of speculation, pseudo-questions that are ultimately unintelligible. Precisely those subjects of inquiry that used to distinguish philosophy from logic are dismissed as chimerical. Analytic philosophy with its emphasis on a clear and precise language as well as its vision of philosophy lends itself to a very useful role in our contemporary scientific-technological world. Yet, the increasing popularity of the vision of philosophy proffered by analytic philosophy should not cause us to forget the nuanced commitments of the historical tradition it challenges. In fact, it is perhaps only by attending to the tradition and its prejudices that the novelty of analytic philosophy can be assessed.

23. According to the passage, which of the following is most likely for [A] 'propaedeutic' to mean?

- ① a preliminary introduction prerequisite to a subject or area of study
- ② a discipline which aims to investigate what truth is
- ③ a consideration of the conjugation between different scientific fields
- ④ a process to invent the correlation of the domain of scientific questions

24. Which of the following is most likely to be inferred from the passage?

- ① Since logic deals with more specific issues than philosophy, logic should not be regarded as concerning with truth.
- ② Traditionally, philosophers have been assumed to ask broader questions than logicians.
- ③ Unlike logic, philosophy does not separate formal aspects of truth from its material conditions.
- ④ Questions asked in logic can only be determined after the topics of philosophy are investigated.

25. According to the passage, analytic philosophy is different from traditional philosophy in the sense that _____.

- ① analytic philosophers eventually aim to answer questions like the existence of God or the soul in a more precise way
- ② analytic philosophy discards logic because of its imprecision and obscurity in the use of language
- ③ analytic philosophers tend to ignore questions that have been asked to make the boundaries between logic and philosophy
- ④ analytic philosophy does not make any contribution to the recent development of science and technology because philosophy is not useful in contemporary society

수 학 15문항 (26-40)

26. 다음 선형계(linear system, 1차연립방정식)

$$\begin{array}{rcl} x + y + 3z & = & 2 \\ x - 2y + 6z & = & 8 \\ x - 3y + az & = & b \end{array}$$

가 유일한 해를 가질 필요충분조건을 바르게 구한 것을
고르시오.

- ① $a \neq 7$ ② $a \neq 7, b \neq 10$
③ $a \neq 7, b = 10$ ④ $a = 7, b = 10$

27. 행정법

$$A = \begin{bmatrix} \frac{1}{2} & \frac{1}{2} & \frac{1}{2} & \frac{1}{2} \\ \frac{1}{2} & \frac{1}{2} & -\frac{1}{2} & -\frac{1}{2} \\ \frac{1}{2} & -\frac{1}{2} & \frac{1}{2} & -\frac{1}{2} \\ \frac{1}{2} & -\frac{1}{2} & -\frac{1}{2} & \frac{1}{2} \end{bmatrix}$$

의 역행렬 $A^{-1} = [b_{ij}]$ 의 모든 원소의 합 $\sum_{i=1}^4 \sum_{j=1}^4 b_{ij}$ 와

행렬식 $\det(\mathbf{A}^{-1})$ 의 값을 각각 바르게 구한 것을 고르시오.

- ① $1, -1$ ② $1, 1$ ③ $2, -1$ ④ $2, 1$

28. 극한 $\lim_{n \rightarrow \infty} \sum_{k=1}^n \frac{1}{2\sqrt{nk} + k}$ 의 값을 구하시오.

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

29. 다음 ①~④ 중 값이 다른 것과 같지 않은 것을 고르시오.

① $\lim_{x \rightarrow 0} \frac{\int_0^{2x} \sin(\tan t) dt}{2x^2}$

② $y = x^{\sin x}$ 일 때, $\left. \frac{dy}{dx} \right|_{x = \frac{\pi}{2}}$

③ $\lim_{x \rightarrow \infty} (e^x + x)^{\frac{1}{x}}$

④ $\frac{1}{2} \int_0^{\frac{\pi^2}{4}} \frac{\cos \sqrt{x}}{\sqrt{x}} dx$

30. 다음 극방정식 중에서 그래프가 같지 않은 것으로 짝지어진 것을 고르시오.

① $\begin{cases} r = 1 + \cos \theta \\ r = -1 + \cos \theta \end{cases}$ ② $\begin{cases} r = \cos 2\theta \\ r = -\cos 2\theta \end{cases}$

③ $\begin{cases} r^2 = \cos \theta \\ r^2 = -\cos \theta \end{cases}$ ④ $\begin{cases} r^2 = \cos 2\theta \\ r^2 = -\cos 2\theta \end{cases}$

31. 다음 (가)~(라) 중 등식이 성립하는 것을 모두 고르시오.

(단, $\mathcal{L}\{f(t)\} = \int_0^\infty e^{-st} f(t) dt$)

(가) $\int_0^{\frac{\pi}{2}} \frac{\sqrt{1 - \sin^2 \theta}}{\sqrt{1 - \sin \theta}} d\theta = \int_{\frac{\pi}{2}}^\pi \frac{\sqrt{1 - \sin^2 \theta}}{\sqrt{1 - \sin \theta}} d\theta$

(나) $\int_0^{\frac{\pi}{2}} \frac{\sqrt{1 - \sin^2 \theta}}{\sqrt{1 - \sin \theta}} d\theta = \int_{-\frac{\pi}{2}}^0 \frac{\sqrt{1 - \sin^2 \theta}}{\sqrt{1 - \sin \theta}} d\theta$

(다) $\mathcal{L}\left\{\int_0^t e^\tau f(\tau) d\tau\right\} = \mathcal{L}\left\{e^t \int_0^t f(\tau) d\tau\right\}$

(라) $\int_0^t e^\tau \cos(t - \tau) d\tau = e^t \int_0^t e^{-\tau} \cos \tau d\tau$

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

32. 다음 급수 중 수렴값이 가장 큰 것을 고르시오.

① $\sum_{n=1}^\infty \frac{n}{2^n}$

② $\sum_{n=0}^\infty \frac{(-1)^n}{2n+1}$

③ $\sum_{n=0}^\infty \frac{1}{n!}$

④ $\sum_{n=0}^\infty \frac{(-1)^n}{n+1}$

33. x, y 에 대한 이변수함수 z 가 $xe^y - z = \arctan(yz)$ 로 정의된다. $(x, y, z) = (-1, 0, -1)$ 일 때 $\frac{\partial z}{\partial x}$ 의 값을 구하시오.

① -1 ② 0 ③ $\frac{2}{3}$ ④ 1

34. 평면 영역 R 은 $|x|+|y| \leq 1$ 로 정의된다. 이중적분

$$\iint_R \frac{(x-y)^2}{\sqrt{(x+y)^2+4}} dA \text{의 값을 구하시오.}$$

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

35. 평면 영역 R 의 경계 곡선 C 가 조각별 매끄러운 단순 닫힌곡선일 때, (가)~(다) 중 R 의 면적을 나타내는 것의 개수를 구하시오. (단, 선적분은 양의 방향으로 수행된다.)

(가) $\oint_C 2024y dx + 2025x dy$

(나) $\oint_C \left(\frac{\ln y}{x} + y^2 \right) dx + \left(\frac{\ln x}{y} + x^2 \right) dy$

(다) $\oint_C ye^x dx + (e^x + x) dy$

- ① 0개 ② 1개 ③ 2개 ④ 3개

36. 평면 $z=y$ 와 포물면 $z=x^2+y^2$ 으로 둘러싸인 입체영역의

경계곡면 S 에 대해, 벡터장

$$\mathbf{F} = (x^2y - 2xyz)\mathbf{i} + (y^2z + y(1-2xz))\mathbf{j} + (z^2x - 2xyz)\mathbf{k}$$

의 면적분 $\iint_S \mathbf{F} \cdot \mathbf{n} dS$ 의 값을 구하시오. (단 $\mathbf{n}$ 은 S 의 바깥 방향 단위법선벡터이다.)

- ① $\frac{\pi}{4}$ ② $\frac{\pi}{8}$ ③ $\frac{\pi}{16}$ ④ $\frac{\pi}{32}$

37. 초깃값 문제 $\frac{dy}{dx} + y \tan x = \sec x$, $y(0) = 1$ 의 해 $y(x)$ 에 대해서, 다음 중 옳지 않은 것을 고르시오.

① $y\left(\frac{\pi}{6}\right) = \frac{1+\sqrt{3}}{2}$

② $y'\left(\frac{\pi}{4}\right) = \sqrt{2}$

③ $y'' + y = 0$ 의 해이다.

④ $\sqrt{2} \sin\left(x + \frac{\pi}{4}\right)$ 와 같다.

38. 미분방정식 $y'' - ay' + by = 4e^x$ 에 대해 $y_p = kx^2e^x$ 가 하나의 특수해가 될 때, $a+b+k$ 의 값을 구하시오.

- ① -1 ② 1 ③ 3 ④ 5

39. 파동방정식 $\frac{\partial^2 u}{\partial t^2} = \frac{\partial^2 u}{\partial x^2}$ 이 경계조건

$u(0, t) = u(1, t) = 0$ 을 만족한다. 고정된 x 에 대해서 $u(x, t)$ 의 라플라스 변환을

$\mathcal{L}\{u(x, t)\} = \int_0^\infty e^{-st} u(x, t) dt = U(x, s)$ 라고 할 때,

다음 중 옳지 않은 것을 고르시오.

① 초기조건 $u(x, 0) = \sin \pi x$, $\left. \frac{\partial u}{\partial t} \right|_{t=0} = u_t(x, 0) = 0$ 이

주어졌을 때, 파동방정식에 라플라스 변환을 취하면

$$\frac{d^2 U}{dx^2} - s^2 U(x, s) = -s \cdot \sin \pi x \text{이다.}$$

② 초기조건 $u(x, 0) = 0$, $\left. \frac{\partial u}{\partial t} \right|_{t=0} = u_t(x, 0) = \sin \pi x$ 이

주어졌을 때, 파동방정식에 라플라스 변환을 취하면

$$\frac{d^2 U}{dx^2} - s^2 U(x, s) = \sin \pi x \text{이다.}$$

③ 초기조건 $u(x, 0) = \sin \pi x$, $\left. \frac{\partial u}{\partial t} \right|_{t=0} = u_t(x, 0) = 0$ 이

주어지면 파동방정식의 해는

$$u(x, t) = \cos \pi t \sin \pi x \text{이다.}$$

④ 초기조건 $u(x, 0) = 0$, $\left. \frac{\partial u}{\partial t} \right|_{t=0} = u_t(x, 0) = \sin \pi x$ 이

주어지면 파동방정식의 해는

$$u(x, t) = \frac{1}{\pi} \sin \pi t \sin \pi x \text{이다.}$$

40. 모든 실수 x 에 대해 두 함수 $f(x)$ 와 $g(x)$ 가

$$f(x) = \frac{2}{\pi} \int_0^\infty \frac{\cos \alpha x}{1 + \alpha^2} d\alpha, \quad g(x) = \frac{2}{\pi} \int_0^\infty \frac{\alpha \sin \alpha x}{1 + \alpha^2} d\alpha \text{로}$$

정의될 때, 다음 중 옳지 않은 것을 고르시오.

① $x > 0$ 일 때 $f(x) = g(x)$ 이다.

② $x < 0$ 일 때 $g(x) = -e^{-x}$ 이다.

③ $x < 0$ 일 때 $f(x) = e^x$ 이다.

④ $\int_0^\infty f(x) \sin \alpha x dx = \frac{\alpha}{1 + \alpha^2}$ 이다.

- 수고하셨습니다 -