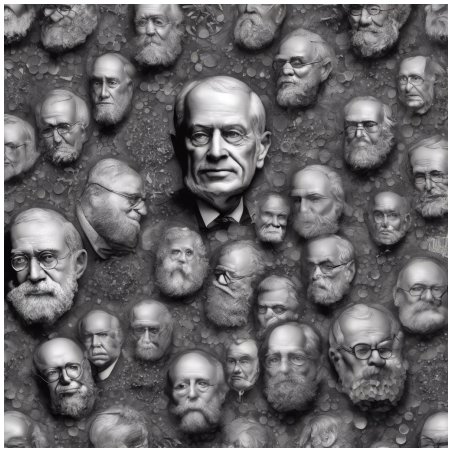
BLACK 5. Nobel Prizes Swallowed by AI



[1문단] Year 2024's Nobel Prizes in Physics and Chemistry have been ①**swept away** by artificial intelligence (AI). The Physics Prize was ②**granted** to John Hopfield, a professor at Princeton University, and Geoffrey Hinton, a professor at the University of Toronto, for **[lying/laying]** the foundation of machine learning through artificial ③**neutral** networks. The Chemistry Prize went to David Baker, a professor at the University of Washington, and to Demis Hassabis, CEO of Google DeepMind, and John Jumper, senior researcher, for developing AI-based software to ④**predict** and design protein structures and functions. Many consider this year's Nobel science prizes to be ⑤**groundbreaking** in various respects.

[2문단] The AI wave, which started in March 2016 when AlphaGo from Google DeepMind defeated Lee Sedol, a Go master, by four games to one in Seoul, has been shaking the world. **The dream of Alan Turing, who envisioned that computers might simulate human logical and rational thinking, is finally becoming a reality.** Global excitement is building. The corporate landscape is **[shifting/suspending]**, and the semiconductor market is in flux. **Even our Ministry of Education has eagerly jumped on board, planned to position the country as a leader in education by entrusting AI with personalized student learning.** Starting next year, AI digital textbooks (AIDT) will be introduced in elementary, middle, and high schools across the country.

[3문단] Generative AI (GPT), which can engage in natural conversations with humans and create images, [operates/operating] through deep learning딥 러닝**, known as 'machine learning.'** Using vast amounts of big data, it **'l□□□□s'** on its own. **Equipped with neural networks modeled after the human brain, AI acquires the ability to think and make judgments through self-learning.** OpenAI's ChatGPT, introduced two years ago and surprising the world, is an example of such AI.

[4문단] No longer could The Nobel Prize committees ignore the growing influence of AI.

(A) Thus, they decided to award the Physics Prize to Hopfield and Hinton, known as 'the godfathers of AI,' for their contributions in exploring, verifying, and [compliment/implementing] the possibilities of neural networks, which underpin(주장 등을[의]) 뒷받침하다[근거를 대다] **machine learning academically.**

(B) The Royal Swedish Academy of Sciences believed AI's potential **'**to significantly contribute to human welfare**'** had already been adequately verified and proven.

(C) They felt there was no reason to wait any longer to assess AI's impact on humanity.

[5문단] Of course, the Royal Swedish Academy of Sciences didn't ignore Geoffrey Hinton's concerns about the possibility of [genetic/generative] AI evolving into 'killer robots' that could _____ human intelligence and dominate society. Regardless, this year's Physics Prize is undeniably as unconventional as the 2021 selection of atmospheric대기의 scientists Syukuro Manabe, Klaus Hasselmann, and Giorgio Parisi for their analysis of global warming.

[6문단] The Chemistry Prize this year is even more unconventional. **The scientific achievement of predicting the structure and function of proteins, which enable vital biological processes, and designing new proteins is undeniably 'Nobel-worthy.'** However, David Baker is a life scientist, while Demis Hassabis(48) and John Jumper(39) are scientists at Google DeepMind, a software company unrelated to chemistry. ☞**순서배열 : { the emergence of a new research methodology / in chemistry / Not only / also significant / are the recipients' fields and ages / unprecedented, / but / is. }** Modern chemistry emphasizes **'**logical understanding,**'** clearly distinguishing itself from medieval **[chemistry/alchemy]**. All results must be grounded in **'**scientific evidence**'** to gain academic recognition. This emphasis explains why chemists are so focused on theories such as quantum양자 chemistry, reaction mechanisms, and reaction dynamics.

[7문단] ①**[Thus/Yet]**, Baker's 'RosettaFold' and Hassabis and Jumper's 'AlphaFold' are merely software applications that use deep learning algorithms based on artificial neural networks. It's impossible to theoretically explain the complex 3D structures of proteins. ②**Aside from the fact that some of the six hundred million known proteins' data were used [to/for] training, there's no way to explain [what/how] the software works.** ③**[That/Whether]** the 'AI-predicted structure' is scientific truth is a question worth **[to explore/exploring]**. ④**There's a risk that 'software' might gain authority**권위 **and, like an alchemist emphasizing mystique**신비로움/비밀스러움**, veer**방향을 바꾸다 **into dangerous territory.** ⑤A robot may not injure a human being or, through inaction, allow a human being to come to harm.

*** 주요어휘 영영풀이**

1. _____ to think of (something that you believe might exist or happen in the future); to picture (something) in your mind
2. _____ relating to, or involving a nerve or the nervous system
3. _____ to strengthen or support (something) from below
4. _____ the power to give orders or make decisions; the power or right to direct or control someone or something
5. _____ an area of land that belongs to or is controlled by a government

Questions & Answers

1. 1문단 ①~⑤ 중 문맥상 틀린어휘를 고르고 바르게 고치시오.

_____ → _____

2. 2문단에서 틀린어법을 한개 찾아 바르게 고친 뒤 그 이유를 쓰시오.

_____ → _____ : 틀린이유 _____

3. 3문단에서 빈칸에 들어갈 스펠링을 쓰시오.

'I□□□□s'

4. 4문단을 문맥에 맞게 올바르게 순서배열 한 것을 고르시오.

①A C B ②B A C ③B C A ④C A B ⑤C B A

5. 5문단에서 빈칸에 들어갈 적절한 단어를 고르시오.

① recognize ② surpass ③ appreciate ④ revenge ⑤ support

6. 6문단에서 주어진 문장을 적절하게 어순배열 하시오. (필요시 형태를 바꾸어도 상관없음)

the emergence of a new research methodology / in chemistry / Not only / also significant / are the recipients' fields and ages / unprecedented, / but / is.

Not only _____

_____.

7. 7문단에서, 문맥에 맞게 않은 문장을 고르시오.

8. 올해 노벨 물리학상과 화학상이 AI와 관련된 연구자들에게 수여된 이유는 무엇인가요?

9. 제프리 힌턴과 존 홉필드가 노벨 물리학상을 수상하게 된 이유는 무엇인지 설명하세요.

10. 데이비드 베이커, 데미스 허사비스, 존 점퍼가 노벨 화학상을 수상한 과학적 성과는 무엇인가요?

11. 2016년 구글 딥마인드가 개발한 알파고가 인공지능의 발전에 어떤 영향을 미쳤는지 설명하세요.

12. 올해 노벨 물리학상과 화학상 수상자들의 연구가 기존 학문적 연구와 다른 점은 무엇인가요?

13. 스웨덴 한림원이 인공지능의 영향력을 인정하고 노벨상을 수여한 이유는 무엇인가요?

14. 제프리 힌턴이 제기한 '킬러 로봇'에 대한 우려는 어떤 의미인지 설명하세요.

15. 데미스 허사비스와 존 점퍼의 수상이 화학 분야에서 파격적인 이유는 무엇인가요?

16. '로제타폴드'와 '알파폴드'가 과학적 근거로 인정받기 어려운 이유는 무엇인가요?

17. 인공지능 소프트웨어가 권위를 앞세워 연금술처럼 신비를 강조하게 될 위험성에 대해 설명하세요.

18. Which of the following can**not** be inferred from the passage?

① The Nobel Prizes in Physics and Chemistry this year highlight the growing influence of AI on scientific fields.

② Generative AI's ability to create images and engage in natural conversations is based on deep learning and big data.

③ Some believe that AI-driven predictions in chemistry may lack the "scientific evidence" traditionally required in the field.

④ David Baker, Demis Hassabis, and John Jumper have backgrounds in traditional fields of chemistry.

⑤ The Royal Swedish Academy of Sciences considered AI's potential to improve human welfare in their award decisions.

19. 다음 글을 읽은 후, 문맥을 요약하는 단어를 초성에 맞게 빈칸에 한글로 쓰시오.

1)

현대 과학과 연금술은 연구 방식과 결과 해석에서 큰 차이를 보인다. 현대 과학은 실험과 증명을 통한 논리적 근거를 중시하며, 모든 결과는 재현 가능성과 객관적 증명을 바탕으로 해야 한다. 이에 반해 연금술은 신비적이고 권위에 의존하는 측면이 강하며, 실험 결과보다 상징적 해석이나 관념적 설명에 의존하는 경향이 있었다.

ㄱ	ㅈ	성

2.

최근 AI 기반 연구는 빅데이터와 딥러닝을 통해 복잡한 문제를 해결하고 예측을 가능하게 하지만, 그 작동 원리가 분명하게 밝혀지지 않는 경우가 많다. 이 때문에 AI가 생성한 결과를 무조건적 과학적 사실로 받아들이는 것은 연금술처럼 권위에 의존하는 태도로 이어질 위험이 있다. AI 연구가 과학적 근거로 인정받기 위해서는 예측 과정과 원리가 명확히 설명해야 한다.

ㅌ	ㅁ	성