

East Asia's Frontier Science: AI, Gene Editing, and Cosmic Mysteries Revealed

East Asian Science · Answer Key · 12 Questions

1. Which East Asian nation recently launched the 'K-Moonshot' project, aiming to double research productivity by 2030 and solve major national challenges by integrating AI into science and technology R&D?

- A) Japan
- B) South Korea**
- C) China
- D) Taiwan

2. Researchers in Japan have developed a new CRISPR-Cas9-based genome editing method that can 'partially inhibit gene function.' What is a key application of this technology, as described in recent research?

- A) Developing drought-resistant crops through precision breeding.**
- B) Creating entirely new antibiotic-resistant bacteria.
- C) Accelerating the decay of radioactive waste.
- D) Synthesizing artificial human organs for transplant.

3. China's ASTERIS AI model, detailed in a Science journal publication, is designed for deep-space exploration. What specific capability does this model enhance?

- A) Predicting seismic activity on exoplanets.
- B) Analyzing stellar composition for new element discovery.
- C) Detecting extremely faint astronomical signals and reconstructing deep-space images.**
- D) Navigating asteroid belts with high precision.

4. A recent discovery in China's Huayuan County has revealed a vibrant ecosystem from 512 million years ago. What is significant about the 153 animal species unearthed, of which 59% are new?

- A) They are all microscopic organisms that predate bacteria.
- B) They suggest species dispersed widely via ocean currents and 'floating rafts' during the Cambrian period.**
- C) They are the first evidence of land-based vertebrate life.
- D) They indicate a sudden, complete extinction event caused by a massive asteroid impact.

5. In the field of neuroscience, researchers in Japan have built miniature human brain circuits using fused stem-cell-derived organoids. What crucial role did they identify for the thalamus in this model?

- A) Regulating short-term memory consolidation.
- B) Organizing neural networks and maturing the cortex.**
- C) Processing sensory input directly to the motor cortex.
- D) Controlling emotional responses and complex decision-making.

6. South Korea has achieved a notable ranking in the global AI race. According to Stanford University's 'AI Index 2026' report, where does South Korea stand in terms of the number of notable AI models introduced in 2025?

- A) First place
- B) Second place
- C) Third place**
- D) Fourth place

7. A Chinese astronomical observatory's Tibet AS^γ experiment has provided unprecedented data on cosmic rays. What did they successfully measure for the first time on a very small scale in space?

- A) The gravitational pull of dark matter.
- B) The composition of solar flares.
- C) Chaotic magnetic turbulence.**
- D) The speed of light in a vacuum.

8. Researchers in Taiwan are developing a national 'organ-on-a-chip' model. What key advantage does this technology offer over traditional drug development methods like animal testing?

- A) It significantly reduces the cost of pharmaceutical research by 90%.
- B) It provides a more accurate assessment of drug efficacy using human cells and tissues.**
- C) It allows for the immediate synthesis of new drug compounds.
- D) It can predict patient responses to drugs with 100% accuracy.

9. In Japan, researchers have identified a molecular process related to brain aging. They discovered that a decline in the proteins of the 'LINC complex' leads to what observable effect in aging mice?

- A) Enhanced memory and faster learning.
- B) Distorted nuclear structure and shortened axon length, affecting neuron activity.**
- C) Increased production of neurotransmitters.
- D) A complete cessation of neural network activity.

10. South Korea's Ministry of Science and ICT announced a partnership with Google DeepMind. What significant AI tool, already widely used in South Korea, will researchers explore further as part of this initiative?

- A) AlphaZero
- B) AlphaFold**
- C) Deep Dream
- D) WaveNet

11. A recent paleontological discovery in northeastern China, referred to as the 'Chinese Pompeii,' has revealed dinosaur communities entombed by volcanic ash. What aspect of these finds is particularly striking?

- A) The dinosaurs were found in their final, ordinary moments of life, often appearing to be sleeping.**
- B) All discovered dinosaurs were juveniles, indicating a unique nursery ground.
- C) The fossils are composed of pure gold, preserving their original cellular structure.
- D) The volcanic ash contained DNA from multiple extinct species, including mammals.

12. Which East Asian country is leading in robot density, boasting over 1,000 robot units per 10,000 employees, and is heavily investing in AI robotics with major players like Samsung, Hyundai, and LG?

- A) Japan
- B) China
- C) South Korea**
- D) Taiwan