

Advanced Earth Science Fundamentals

Earth Science · Answer Key · 25 Questions

1. Which layer of the Earth's atmosphere contains the ozone layer that absorbs the majority of ultraviolet radiation?

- A) Troposphere
- B) Stratosphere**
- C) Mesosphere
- D) Thermosphere

2. What is the primary driver of the Earth's thermohaline circulation?

- A) Tidal forces
- B) Differences in water density**
- C) Solar radiation intensity
- D) Coriolis effect

3. Which mineral is the most abundant in the Earth's continental crust?

- A) Quartz
- B) Feldspar**
- C) Calcite
- D) Olivine

4. The San Andreas Fault is an example of which type of plate boundary?

- A) Divergent
- B) Convergent
- C) Transform**
- D) Subduction

5. What is the chemical composition of the Earth's inner core primarily composed of?

- A) Liquid silicate
- B) Solid iron and nickel**
- C) Molten magnesium
- D) Compressed oxygen

6. Which scale is used to measure the moment magnitude of earthquakes, which is more accurate for large earthquakes than the Richter scale?

- A) Mercalli scale
- B) Moment Magnitude Scale (M_w)**
- C) Fujita scale
- D) Saffir-Simpson scale

7. What process involves the conversion of nitrogen gas into ammonia by bacteria in the soil?

- A) Denitrification
- B) Nitrification
- C) Nitrogen fixation**
- D) Ammonification

8. The 'Great Red Spot' is a long-lived storm system on Jupiter, but on Earth, which phenomenon refers to the rotating storm system characterized by low-pressure centers?

- A) Anticyclone
- B) Cyclone**
- C) Frontal boundary
- D) Isobar

9. Which epoch are we currently officially living in according to the International Commission on Stratigraphy?

- A) Anthropocene
- B) Holocene**
- C) Pleistocene
- D) Pliocene

10. Which type of rock is formed from the cooling and solidification of molten magma or lava?

- A) Sedimentary
- B) Metamorphic
- C) Igneous**
- D) Conglomerate

11. What is the term for the boundary that separates the crust from the mantle?

- A) Gutenberg discontinuity
- B) Mohorovicic discontinuity**
- C) Lehmann discontinuity
- D) Conrad discontinuity

12. Which atmospheric gas is the most abundant by volume in Earth's dry atmosphere?

- A) Oxygen
- B) Argon
- C) Nitrogen**
- D) Carbon Dioxide

13. What phenomenon is primarily responsible for the seasonal variation in Earth's temperature?

A) Earth's distance from the Sun

B) The tilt of Earth's axis

C) Ocean currents

D) Solar flare activity

14. Which layer of the Earth is liquid and believed to be responsible for the generation of the Earth's magnetic field?

A) Inner core

B) Outer core

C) Lower mantle

D) Asthenosphere

15. What is the term for the process by which water vapor is released from plants into the atmosphere?

A) Evaporation

B) Sublimation

C) Transpiration

D) Condensation

16. Which specific zone of the ocean is also known as the 'twilight zone' where sunlight is insufficient for photosynthesis?

A) Epipelagic

B) Mesopelagic

C) Bathypelagic

D) Abyssopelagic

17. What type of volcanic eruption is characterized by a violent, explosive release of ash and gas from a stratovolcano?

A) Hawaiian

B) Strombolian

C) Plinian

D) Fissure

18. Which law of stratigraphy states that in an undisturbed sequence of rocks, the oldest layers are at the bottom?

A) Principle of superposition

B) Principle of cross-cutting relationships

C) Principle of original horizontality

D) Walther's Law

19. What is the name of the supercontinent that existed approximately 335 to 175 million years ago?

- A) Gondwana
- B) Laurasia
- C) Pangaea**
- D) Rodinia

20. Which geological era is known as the 'Age of Reptiles'?

- A) Paleozoic
- B) Mesozoic**
- C) Cenozoic
- D) Precambrian

21. The Coriolis effect is a result of which physical property of Earth?

- A) Gravity
- B) Rotation**
- C) Magnetic field
- D) Atmospheric density

22. Which term describes the total amount of water vapor in the air?

- A) Relative humidity
- B) Specific humidity**
- C) Dew point
- D) Saturation vapor pressure

23. What kind of climate is typical for a region characterized by high pressure and descending air masses?

- A) Rainforest
- B) Desert**
- C) Tundra
- D) Savanna

24. Which mineral has a hardness of 10 on the Mohs scale?

- A) Corundum
- B) Topaz
- C) Diamond**
- D) Quartz

25. What is the primary component of Earth's crust by mass?

- A) Oxygen**
- B) Silicon
- C) Aluminum
- D) Iron