

Natural Disasters Advanced Knowledge

Geology And Meteorology · Answer Key · 25 Questions

1. Which scale is currently used by the United States National Weather Service to rate tornado intensity based on estimated wind speeds and related damage?

- A) Saffir-Simpson Scale
- B) Enhanced Fujita Scale**
- C) Mercalli Intensity Scale
- D) Beaufort Scale

2. What is the primary physical phenomenon that generates a tsunami in the open ocean following an underwater earthquake?

- A) Vertical displacement of the seafloor**
- B) Rapid thermal expansion of water
- C) Undersea volcanic eruption plume
- D) Refraction of tidal currents

3. In volcanic classification, what term describes a volcanic eruption characterized by gas-driven explosions that eject pyroclastic material into the stratosphere?

- A) Hawaiian
- B) Strombolian
- C) Plinian**
- D) Phreatic

4. Which layer of the atmosphere contains the majority of the mass responsible for the development of severe thunderstorms and hurricanes?

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

5. The 'Ring of Fire' is a direct result of which tectonic process that occurs primarily along the edges of the Pacific Plate?

- A) Seafloor spreading
- B) Subduction**
- C) Transform faulting
- D) Continental rifting

6. What is the technical term for the secondary shockwave that occurs after the main rupture of an earthquake?

- A) Foreshock
- B) Aftershock**
- C) Seismic tremor
- D) P-wave reflection

7. Which of these atmospheric pressure conditions is a requirement for the formation of a tropical cyclone?

- A) High-pressure center
- B) Low-pressure center**
- C) Constant barometric pressure
- D) Sub-polar anticyclone

8. What specific type of landslide involves the rapid downslope movement of earth materials that are saturated with water and behave like a viscous fluid?

- A) Rockfall
- B) Debris flow**
- C) Slump
- D) Creep

9. The 1815 eruption of Mount Tambora, which caused the 'Year Without a Summer,' is classified as what on the Volcanic Explosivity Index (VEI)?

- A) VEI 5
- B) VEI 6
- C) VEI 7**
- D) VEI 8

10. Which instrument is used to detect the P-waves and S-waves generated by an earthquake?

- A) Barometer
- B) Seismograph**
- C) Hygrometer
- D) Anemometer

11. What is the name of the phenomenon where saturated soil loses its strength and stiffness in response to earthquake shaking, causing it to act like a liquid?

- A) Soil liquefaction**
- B) Frost heaving
- C) Land subsidence
- D) Soil creep

12. What is the primary driving force behind the development of a storm surge during a hurricane?

- A) Tidal gravitational pull
- B) Atmospheric pressure drops and wind stress**
- C) Ocean current reversal
- D) Seismic seafloor shifting

13. Which global climate oscillation is primarily responsible for significant changes in precipitation and temperature patterns associated with severe droughts and flooding?

- A) El Niño-Southern Oscillation**
- B) Pacific Decadal Oscillation
- C) Atlantic Multidecadal Oscillation
- D) Arctic Oscillation

14. A 'supercell' thunderstorm is most notably characterized by the presence of what internal feature?

- A) A cold front boundary
- B) A mesocyclone**
- C) A high-altitude inversion
- D) A stationary dryline

15. What is the maximum wind speed threshold that distinguishes a tropical storm from a hurricane in the Atlantic basin?

- A) 64 knots
- B) 74 knots**
- C) 84 knots
- D) 94 knots

16. Which type of earthquake wave travels the fastest and is the first to be recorded by a seismograph?

- A) P-wave**
- B) S-wave
- C) Love wave
- D) Rayleigh wave

17. The 2004 Indian Ocean tsunami was triggered by a magnitude 9.1 earthquake located near the coast of which island?

- A) Java
- B) Sumatra**
- C) Borneo
- D) Sulawesi

18. What is the term for a volcanic mudflow composed of pyroclastic material and water, often triggered by the melting of glacial ice?

- A) Lahar**
- B) Tephra
- C) Pumice
- D) Magma flow

19. Which cloud type is most commonly associated with severe thunderstorm development and hail?

- A) Cirrocumulus
- B) Altostratus
- C) Cumulonimbus**
- D) Nimbostratus

20. What defines the 'epicenter' of an earthquake?

- A) The point of rupture beneath the surface
- B) The point on the surface directly above the focus**
- C) The location of the maximum magnitude
- D) The boundary of the tectonic plate

21. What is the scientific term for the sudden, rapid movement of a large volume of snow down a mountain slope?

- A) Avalanche**
- B) Glacial surge
- C) Firn slide
- D) Mass wasting

22. Which chemical compound, released during major volcanic eruptions, is primarily responsible for short-term global cooling?

- A) Sulfur dioxide**
- B) Methane
- C) Carbon monoxide
- D) Nitrous oxide

23. What is the minimum sustained wind speed required for a tropical cyclone to be categorized as a Category 5 hurricane on the Saffir-Simpson scale?

- A) 135 mph
- B) 145 mph
- C) 157 mph**
- D) 165 mph

24. Which seismic wave is responsible for most of the structural damage during an earthquake due to its large amplitude and rolling motion?

- A) P-wave
- B) S-wave
- C) Rayleigh wave**
- D) Body wave

25. In the context of forest fires, what is the 'fuel moisture content' referring to?

- A) The temperature of the vegetation
- B) The percentage of water in the dead or live vegetation**
- C) The speed at which air moves through the fuel
- D) The thickness of the leaf litter layer